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THESE THREE HUNDRED TENNIS COURTS IN PROSPECT PARK, BROOKLYN, APPEAR TO BE APPRECIATED

Modern parks and park systems are not only great physical, mental and spiritual generative and regenerative centers because of the opportunities they

PARKS

A MANUAL OF MUNICIPAL AND COUNTY PARKS

Compiled as a result of a nation-wide study of municipal and county parks conducted by the Playground and Recreation Association of America in co-operation with the American Institute of Park Executives at the request of the National Conference on Outdoor Recreation. The study was made possible through funds granted by he Laura Spelman Rockefeller Memorial

EDITED BY L. H. WEIR
DIRECTOR OF THE STUDY

Volume Two

*T 711
W43
Vol. 2

NEW YORK
A. S. BARNES AND COMPANY
1928

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Playground and Recreation Association of America, Incorporated

Printed in the United States of America

The Murray Printing Company
Cambridge, Massachusetts

296820

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CHAPTER VIII

GENERAL EXECUTIVE ORGANIZATION OF A PARK DEPARTMENT

A park department comprises two distinct divisions: (1) the governing authority; (2) the executive organization. In Chapter VI the various types of governing authorities have been considered chiefly from the point of view of the legal phases of their creation and existence, and of the various powers, rights, duties and responsibilities which they exercise under the law. This chapter will consider how these various agencies organize to discharge these responsibilitieswith part icular reference to the executive organization.

Position of Governing Authority in the Departmental Organization

In organizing the department it is important that the governing authority never lose sight of the fact that its function is to govern and not to execute. Much confusion has arisen and often halting execution of plans and policies has resulted from attempts of authorities to act as executives and to govern at the same time. It is not always easy to distinguish between what is governmental and what is executive in the conduct of the department. Some of the major phases of the act of governing may be said to include the following: 1. An interpretation of the intents and purposes of the law or laws under which a governing authority operates. 2. The translation of the intents and purposes of the law or laws into a series of plans and policies. 3. The raising and safeguarding of funds. 4. Consideration and action upon all manner of proposals originating either from the members of the board (in case of a park board or commission) or from citizens as individuals or organized groups, or from the executive officer or officers of the department or from any other source in the community. 5. The creation and maintenance of an executive organization to put into effect plans and policies formulated and adopted. 6. The general oversight and supervision of the acts of executive officers. 7. Rendering an account of all acts and doings to the people.

Officer organization. One of the very first acts of a governing authority of the board or commission type has to do with its internal organization. This consists of the election of officers and the formulation and adoption of a code of procedure in the conduct of its business. The officers usually comprise a president, vice-president, treasurer and a secretary. The first two are always members of the board or commission. The treasurer may be a member of the board or he may be the treasurer of the municipality

or county in which the board operates. The secretary may be a member of the board or the clerk of the municipality or some one selected by the board from outside. If the secretary is not a member of the board and is placed in charge of the records and the office organization in general he should preferably be considered a part of the executive organization and not an integral part of the governing authority organization. Officers are usually elected for one year or until their successors are elected and qualified. (For reference to the officer organization, see Chapter VI, pages 452–459.)

Committee organization. Most park boards have as a part of their internal organization a system of committees. These are of two kinds, standing committees and special committees. These are usually appointed by the president.

While the committee system is an excellent method for division of responsibilities and duties among the members and for keeping the interest of the members alive and alert to the work of the department, the greatest care should be exercised in defining their duties and powers. This is especially true of standing committees whose duties in any way relate to executive functions. As a rule the powers and duties of all committees should be limited strictly to advisory functions only. An instance is noted where a park and recreation board had ten standing committees and every committee exercised executive functions. It is needless to say that the chief executive became a mere figure head and the entire department was hopelessly disorganized. In general it may be suggested that the administrative business of the average park department can be more expeditiously and efficiently conducted in the committee of the whole than through a number of sub-committees, and there is likely to be far less confusion arising in the executive organization. On the other hand, it is often valuable and desirable to appoint special committees from time to time to make investigations and reports on specific situations and problems.

By-laws. The code of procedure by which a park governing authority declares its plans and policies for conducting its affairs is usually embodied in by-laws. In the case of independent park districts these by-laws are generally enacted in the form of ordinances. The form and content of by-laws are illustrated by the following examples of such codes formulated and adopted by some of the park governing authorities in this country.

Their content may be summarized as follows: 1. Statement of officer organization. 2. Definition of duties of officers of the board or commission and of certain of the executive officers. 3. Statement of committee organization and definition of the duties of committees. 4. References to handling certain fiscal matters, especially those relating to contracts and financial

reports. 5. Statement of the time or times and place of holding meetings and order of the conduct of business. 6. Provisions for certain kinds of reports. 7. Provisions for amendment of by-laws.

BY-LAWS GOVERNING THE PARK AND RECREATIONAL BOARD OF THE CITY OF BIRMINGHAM, ALABAMA

Be it resolved by the Park and Recreational Board of the City of Birmingham, Alabama, that the by-laws of said board be and the same are as follows:

1. *Officers. Election and term of office of president and vice-president.* The officers of the Park and Recreational Board of the City of Birmingham, Alabama, shall be a president, vice-president, secretary and a general superintendent. The president and vice-president shall be elected by ballot of the board at the first meeting in November of each year, shall be members of the board and hold office for one year from date of election and until their successors shall be elected and qualified.

2. *Duties of president.* The president shall be the executive officer of the board. It shall be his duty to preside at all meetings when present; sign all contracts and other papers authorized by the board; to see that all rules and regulations of the board are enforced and all orders faithfully executed, and to have general direction of all officers of the board whose offices are created by the board.

3. *Duties of vice-president.* The vice-president, in the absence of the president, shall be clothed with all powers and perform all the duties of the president.

4. *Secretary. Appointment, salary, duties and bond.* The secretary shall be a person not a member of the board, and shall be elected by the board and shall hold office during the pleasure of the board and at such salary as the board may fix. The secretary shall not be elected unless all members of the board are present at the time of voting, or unless a majority of the board are present and voting after all members of the board have been notified that at said meeting a secretary would be elected. The secretary shall have custody of the corporate seal and of the books and papers pertaining to the office, and shall attest and affix the corporate seal to all instruments requiring such action when authorized by resolution or vote of the board. The secretary shall attend all meetings of the board and keep a full and true record of its proceedings. The secretary shall keep accurate records and books of account, and shall prepare annually a full and detailed report of the acts and doings of the board, together with a complete itemized account of all receipts and disbursements of money. The secretary shall keep the original or true copies of all necessary accounts and vouchers subject at all times to the inspection of the members of the board, and shall make report to the board every month or as often as desired by the board, showing the amount of money on hand, the receipts and disbursements since the last report. The secretary shall receive and conduct the correspondence of the board, issue all official notices and prepare all papers and reports for the meetings of the board and for committees. He shall be responsible for the tools, implements and supplies held in store, and for the accuracy of the accounts of the storekeeper and the maintenance of inventories of supplies received and used. He shall be held responsible for the economical purchase of all supplies and materials received and for satisfactory competition in all purchases. It shall be his duty to see that no purchases are made on requisitions for materials, supplies, tools, implements or other property, the cost of which will exceed one hundred dollars, without bids being taken thereon, the bids to be submitted to the board before the contract is awarded. It shall be his duty to supply properly, either from the storehouse or by purchase, any materials, tools, implements or supplies needed by the different park employees in their work. Purchases are to be made only on properly prepared requisitions authorized by the board. It shall be his duty to examine the proposals received on advertisements for purchases, and to prepare comprehensive tabulated statements for purchases, and to give to the board his recommendation as to the character and value of the work, material and implements offered in the proposal. He shall also perform the duties of purchasing agent, and in that capacity, shall, subject to the action of the board, have charge of the purchase of all materials, tools, implements and supplies. The secretary shall give bond in the sum of not less than five thousand dollars, with surety to be approved by the board, and shall give full time to the duties of the office, at the office of the board in the city hall. All calls for meetings of standing committees or special committees shall be issued by the secretary upon request by the chairman of the committee.

5. *Treasurer and duties.* The comptroller of the city of Birmingham shall be custodian of the money and funds of the board. The park and recreational fund of the board shall be kept with the funds of the city of Birmingham in such depository to the credit of the city as the governing body of the city may direct, and all payments and disbursements from this fund as and when made shall be validated by the countersignature of the officer or person designated by the governing body of the city to countersign or validate checks drawn for other municipal purposes, and such countersignature of such officer of the city shall be made only upon the authority of vouchers or resolution authorized by said

board which have been certified by the secretary and approved by the president. The comptroller shall at all times, upon request of the secretary, furnish to the secretary all such information as may be necessary to enable the secretary to keep a complete itemized account of all receipts and disbursements and balance on hand pertaining to the park and recreational fund of said board.

6. *General park superintendent. Appointment, salary, duties and bond.* The general superintendent shall be a person not a member of the board, and shall be elected by the board, and shall hold office during the pleasure of the board and at such salary as the board may fix. The general superintendent shall not be elected unless all members of the board are present at the time of voting, or unless a majority of the board are present and voting after all members of the board have been notified that at said meeting a general superintendent would be elected. The general superintendent, acting under the president and members of the board, shall have general management and supervision of all parks, playgrounds and recreational activities. It shall be his duty to see that his various departments are properly and efficiently organized, and their various activities coördinated and harmonized, and to this end he shall have in a general way supervision of the work of all of the departments and shall be responsible to the president and to the board for the satisfactory and economical administration and operation of all departments. He shall recommend to the board such rules and regulations for the government of the different departments as may be considered necessary and proper. He shall be the general agent of the board in matters respecting the upkeep, management, conduct, development, improvement, equipment and maintenance of parks, park areas, park boulevards, playgrounds, recreational centers and storehouses pertaining thereto, and shall employ, manage, control and discharge such number of persons as authorized by the board to be employed as laborers and helpers connected with his work, the wages of such employees first being determined by the board. The general superintendent shall give bond in the sum of five thousand dollars, with surety to be approved by the board if requested.

7. *Committees, standing and special.* All standing and special committees shall be appointed by the president, and in case of the absence or disability of a member of a committee, the president may appoint another member to act temporarily in his or her place. The president shall be *ex officio* member of all committees. The duties of all committees shall be defined by resolutions of the board and actions of the committees shall be advisory and not executive. The reports of all committees shall be made in writing, and shall be signed by a majority of the members of the committee and shall be recorded in the minutes of the board by the secretary. The secretary shall keep a record of the proceedings of every standing committee, which shall be kept at the office of the board, and subject to the investigation of all members of the board.

8. *Regular meetings.* Regular meetings of the board shall be held on the second and fourth Wednesdays of each month at 10 A.M.

9. *Special meetings.* Special meetings of the board shall be called by the president whenever he shall deem it necessary, and shall be called by the secretary at the request in writing of any two members of the board, subject to be stated in call. Regular notices of all such meetings shall be given the members of the board by depositing same, properly addressed and stamped, in the post office at least forty-eight hours before the time of such meeting, or be personally served upon the members at least three hours before such meeting.

10. *Place of meetings.* All meetings of the board shall be held in its offices in the city hall, providing, however, that special meetings or adjourned meetings may be held at any place within the city of Birmingham with the consent of at least three members of the board. Three members of the board shall constitute a quorum for the transaction of business.

11. *Reports and resolutions.* All reports and resolutions shall be in writing.

12. *Board acts by yea and nay vote.* The yeas and nays shall be taken upon passing any resolution, and upon all proposals which create any liability, or for the expenditure or appropriation of money, and in all cases upon the request of any member of the board.

13. *Salaried officers and employees. Full-time service. Disinterestedness in action of board.* All salaried officers or other persons in the employ of the board shall give such proportion of their time and attention to their duties as the board shall require. No officer or employee created by the board shall hold a salaried office or have regular employment in any other business or occupation. No officer or employee created by the board shall hold office or employment of appointment under the city of Birmingham or any department of the said city or any institution thereof, save only that of the park and recreation board, nor shall any officer or employee of the board be concerned in any contract with the board of the said city, or any of its departments or institutions, either as a contractor, subcontractor, or party directly or indirectly interested therein. No salaried officer in the employ of the board shall absent himself from duty without leave signed by the president.

14. *Order of business.* Unless otherwise ordered by a vote of the majority of members present, the following shall be the order of business at regular meetings of the board: 1. Calling the roll. 2. Reading minutes of previous meeting. 3. Reports of standing committees. 4. Reports of general superintendent. 5. Reports of special committees. 6. Report of secretary. 7. Unfinished business. 8. Communications and new business.

15. *Contracts, competitive bids.* All contracts exceeding in amount the sum of one hundred dollars for work, materials or supplies shall be let by the board, after competitive bids have been taken thereon, to the lowest trustworthy and responsible bidder, the right being reserved to accept or reject any and all bids or parts thereof. Contracts may be let without taking bids if authorized by the vote of four members of the board.

16. *Contractor's bond.* Whenever any contract exceeding in amount the sum of five hundred dollars or less amount, if board so directs, is authorized and the specifications on which proposals for the award of said contract are invited require the person to whom the said contract is awarded to furnish bond for the faithful performance of said contract, said contractor shall furnish such bond in such amount as the board may designate, and containing such conditions and provisions as the board may deem necessary and proper before delivery of duplicate contract to said contractor. Said bonds shall be signed by some surety satisfactory to the board in all respects.

17. *Vouchers.* Vouchers for the payment of money shall be drawn on the comptroller by the secretary, and shall be signed by the secretary, approved and countersigned by the president, and countersigned by the officer or person designated by the governing body of the city of Birmingham to countersign or validate checks drawn for other municipal purposes.

18. *Vouchers for salaries and wages.* Vouchers for payment of authorized salaries of all officers and wages of all employees, and warrants for the payment of maturing interest on any indebtedness of the board, and also for the payments of estimates on duly authorized contracts, may be drawn and issued as the same become due and payable. No other warrants shall be drawn except on resolution of the board.

19. On or before the tenth day of each month all bills other than those specified in the preceding section shall be filed with the secretary, who shall attach same to the proper vouchers, and after examination by the chairman of finance committee, together with his recommendation, shall be presented by the secretary at the next regular meeting of the board for action thereon.

20. *Premiums on bonds of officer*. Premiums on bonds of officers required shall be paid by the board out of the park and recreation fund.

21. *Standing committees.* The standing committees of the park and recreation board shall be as follows, each committee consisting of three members appointed by the president, who shall hold office during the term of the president appointing: 1. Committee on finance. 2. Committee on maintenance and improvements. 3. Committee on supplies. 4. Committee on recreation. 5. Committee on forestry and fine arts.

(*a*) *Committee on finance.* The committee on finance shall examine all bills and claims having the order of the secretary attached, which may be presented to the park and recreation board, and report same to the board, audited and approved, or rejected, with reasons for such rejection. The committee, at least once a year, and oftener if the board so desires, shall examine or cause to be examined the books, inventories, accounts and vouchers of the secretary, and shall report their correctness to the board; and all officers and employees of the board shall produce and submit to such accountants for examination all papers, documents, accounts and vouchers in their office belonging to the same or thereto pertaining, and shall in every way assist said accountants in their work. In the report to be made by such accountants they may make any recommendation they deem proper as to the business methods of such officers or employees. Said committee is charged with the duty of preparing and submitting to the board for consideration at least two months before the end of the fiscal year, a budget of expenditures and expenses by and of the board for the next ensuing fiscal year. Said committee is charged with the duty of suggesting to the board ways and means by which needed revenues may be raised, and shall be the general soliciting agent of the board for contributions from the public of moneys and lands.

(*b*) *Committee on maintenance and improvements.* It shall be the duty of the committee on maintenance and improvements to consider matters pertaining to the maintenance, equipment and improvement of parks, parkways, boulevards and buildings which may be referred to it by the board, and to recommend to the board such action as it may deem proper for the best interests of the board. It shall be the duty of this committee to open all bids for improvements and maintenance work, and to submit same to the board with its recommendations for action. The committee shall hold public meetings whenever bids for public-lettings are to be opened.

(*c*) *Committee on supplies.* It shall be the duty of the committee on supplies to examine the reports of the secretary concerning the purchase of supplies, and to approve or disapprove same in its report to the board. It shall recommend to the board for action such matters as may require the approval of the board. It shall be the duty of this committee to open all bids on material and supplies exceeding the amount authorized under Section 15, and to submit same to the board, with recommendations, at its next regular or called meeting for this purpose.

(*d*) *Committee on recreation.* It shall be the duty of the committee on recreation to consider matters pertaining to the use of all recreational and social facilities of the park system, including playgrounds, athletic fields, bathhouses, swimming, skating, coasting, picnicking and boating facilities, tennis courts, baseball grounds, golf links, social centers, etc., which may be referred to it by the board, and to recommend to the board such action as it may deem proper for the best

interests of the department. It shall recommend to the board such action as it deems proper for the care, maintenance and control of zoölogical gardens.

(*e*) *Committee on forestry and fine arts.* It shall be the duty of the committee on forestry and fine arts, to consider matters pertaining to music, art in museums or galleries, sculpture, historical naming of parks, all memorials in the park area and landscape gardening, such as planting of trees, the care and removal of trees, flowers, shrubs, grass, etc., in the parks and parkways and boulevards, as well as on the streets and thoroughfares of the city which may be referred to it by the board and to submit to the board recommendations as to furnishing or allowing music for any of the fine arts for the benefit of or contributed by the public in the parks or park areas, and shall recommend to the board such action as it deems proper for the best interests of the city in these matters.

22. *Fiscal year.* The fiscal year of the board shall end September 30 in each year.

23. "Any article of the by-laws may be amended or repealed, and any new article may be incorporated therein by vote of the majority of the board of park commissioners. All such changes to be presented in writing, provided the proposed amendments, repeals or additions, shall lay over one meeting before a vote be taken thereon, but by unanimous consent of the whole board, such matter may be acted on at once.

Adopted and approved by the board, this the..... day of....., 1924.

.....
President.

A Few Provisions in Other Cities.

According to the provisions of the by-laws of the commissioners of public parks, New Haven, Connecticut, the same person may be both secretary and treasurer, serving without salary but being allowed such clerical and incidental expenses — not to exceed five hundred dollars a year — as he may deem necessary and as may be approved by the president. There shall be an assistant secretary who may or may not be a member of the commission, and an assistant treasurer annually appointed from the members of the commission.

The standing committees of the New Haven Park Commissioners include finance and estimates, purchase of lands, and restaurants and concessions. There is also a committee for each park to have such oversight of the "appropriation for the same and the mode of expending such an appropriation, and to have such powers with reference to such expenditures as the commission may order from time to time." Each committee shall consist of not less than three nor more than four members, and each member of the board shall serve upon at least one of the committees. No committee is permitted to spend over one hundred dollars on any work or improvement without special authority from the commissioners.

The by-laws of the Board of Park Commissioners of Fort Worth, Texas, provide for a music and entertainment committee of two members and an emergency committee of two members to act in conjunction with the superintendent to care for all emergencies occurring between board meetings which cannot be delayed until the next meeting. This committee has the authority to incur an expense not to exceed one hundred and fifty dollars. The president may appoint a committee of one or more members to act with the superintendent in supervising and planning any activities, construction work, planning parks, laying out road work, tree, shrubbery

or flower planting. The committees may act between meetings subject to the approval of the board.

By-Laws in a County Park System.

ESSEX COUNTY, NEW JERSEY

Article I. Meetings

Sec. 1. The annual meeting shall be held on the fourth Tuesday in April in each year, at the rooms of the commission, at three o'clock in the afternoon.

Sec. 2. The regular meeting shall be held on the second Tuesday in each month, at three o'clock in the afternoon, and at such other times as may be determined upon by a majority of the board before adjournment of any meeting.

Sec. 3. The president may call special meetings whenever deemed necessary; and shall call special meetings when requested by two commissioners. In the call for special meetings, the subject matter for consideration must be specified in the notice.

Sec. 4. Three commissioners shall constitute a quorum at any meeting, and a majority of each committee shall constitute a quorum.

Sec. 5. The secretary shall send written notices of all meetings to each commissioner through the mails or by messenger, at least twenty-four hours preceding the date of said meeting.

Article II. Officers

The officers shall consist of a president, a vice-president, a treasurer and a treasurer *pro tem.*, who shall be members of the board, and who shall be elected at the annual meeting. A secretary, who shall not be a member of the board, and such other officers and employees as may be required, shall be appointed from time to time, and shall hold office during the pleasure of the board. In case of the secretary's absence or disability, the office may be filled by temporary appointment. Vacancies of offices may be filled at any meeting in the manner provided, by a majority vote of the commission.

Article III. Duties of the President

The president shall preside at all meetings of the commissioners, and shall be an *ex officio* member of all committees. He shall execute all contracts and other papers necessary to the transaction of the business of the board.

Article IV. Duties of the Vice-President

In the absence of the president, the vice-president shall exercise the powers and perform the duties of the president. In case of the absence of both, the board may appoint a president *pro tem.*

Article V. Duties of the Treasurer

Sec. 1. The treasurer shall have charge of the funds of the commission which shall be kept in such institutions as the board may select. Transfers may be made from one bank to another by the treasurer. Bills, after approval, shall be paid by warrant approved by the president or vice-president and the secretary and made effective by the signature of the treasurer, or in his absence or inability, by the treasurer *pro tem.*

Sec. 2. The treasurer shall keep proper books of account.

Article VI. Duties of the Secretary

Sec. 1. The secretary shall keep a correct record of the proceedings of the board at all meetings, give notices of all regular, adjourned and special meetings and perform such other duties as may be devolved upon him by the board.

Sec. 2. The secretary shall have the custody of the seal of the commission.

Article VII. Committees

Committees may be appointed by the president at any time, subject to the approval or by the direction of the board.

Article VIII. Voting

All resolutions authorizing the making of contracts or the payment of money shall require the affirmative vote of three commissioners at any meeting of the board. The yeas and nays may be called by any member on any question which shall be subject to a vote of the board, and such vote shall be duly recorded in the minutes.

Article IX. Order of Business

The following order of business shall be observed at every meeting, changes being allowed by unanimous consent:

1. Calling of roll. 2. Reading of the minutes of the preceding meeting and the report or reading of the proceedings of the committees. 3. Reports of officers. 4. Report of secretary or other assistant. 5. Unfinished business. 6. New business.

Article X. Seal of the Commission

The seal of the commission shall be the words "The Essex County Park Commission" surrounding the figures "1895."

Article XI. Changes of By-Laws

These by-laws may be altered, amended or added to when notice of the same shall have been given at a meeting at least one week prior to action upon them. It shall require a majority vote of all members of the board for their adoption.

Meetings and Record of Proceedings.

It is in the regular and special meetings where the park board plays its major formal rôle as a governing authority. Here all proposals arising from any and every source are formally considered and formally acted upon. Regularity as to time and permanency in place of meeting is of the highest importance both in relation to the efficient administration of the business of the department and in relation to the convenience of the public. A meeting every two weeks appears to be sufficient for handling all the administrative business of the average park department.

Special meetings may be necessary from time to time for the consideration of matters needing immediate attention, but since the use of special meetings is liable to great abuses it is desirable that they be used sparingly and then only under strict rules as to timely notification of members, place and time of meeting and a statement of the subject matter to be discussed.

While it may be necessary, from time to time, to consider certain proposals in executive session, such as the specific locations of properties in a general plan, or subjects involving a marked change in policies, this practice should be followed only when it unquestionably appears that the public interest will thus be better served. Few practices are so likely to arouse public suspicion and distrust, resulting in the loss of public confidence, than that of holding executive sessions. Park governing authorities should always bear in mind that they are merely servants of the people and that all matters relating to this service for the people should be considered openly except in those rare instances where, in the judgment of the governing authorities, the interests of their masters can be better served in temporary secrecy.

The minutes or various recorded actions upon all proposals considered and acted upon by the governing authority constitute, next to the organic law under which it operates, the most important document or series of documents in the possession of the department. These are not only an historical record of the acts and doings of the governing authority but also a reservoir of reference in case of any controversies that may thereafter arise, and a constant declaration of policies and plans. It is extremely important that these minutes or records be kept with great care as to accuracy and usableness. They should be maintained, either in written or printed form, in bound volumes, each volume being subjectively and alphabetically indexed. A subjective, cross reference, card index file of these records should be maintained so that any action of the governing authority on any subject whatever, no matter how many years back, can readily be found.

Raising and Using Funds.

The rôle of a park governing authority in raising and using funds is considered at length in Chapter VII, "Park Financing," pages 471–506.

A park governing authority can, perhaps, more easily win or lose public confidence through the way in which it handles the money entrusted to its care than through any other means. To handle it wisely requires a discriminating conception and understanding of the needs of the people. It also requires business acumen in keeping a proper balance between improvement projects and income for operation and maintenance. It may sometimes happen that a governing authority may act in the use of funds on a line of action that does not happen to meet with public approval, yet in the long run may represent a wiser policy than one which the people might immediately approve. In such a case the authority can only have the courage of conviction and take the consequences. On the whole, however, if there is unmistakable evidence of a widespread public demand for a certain line of action, a governing authority cannot go far wrong to give heed to it in the application of funds. It is a major responsibility of the authority, as a governing authority, to seek out, analyze and weigh the public needs and the public demands.

The Governing Authority in the Rôle of a Legislature.

In its legislative capacity a park governing authority assumes the position of a ruler over its rulers. In this capacity it lays down rules and regulations for use, by the people, of the properties under its control. These rules and regulations are intended more as guides to the people, but they nevertheless have all the force of laws and may be enforced in any court of law of competent jurisdiction. This function of a park governing authority is discussed in detail in Chapter XIV, "Park Policing," pages 747–791.

Accounting to the Public.

The best accounting that a park governing authority can give the people is in the volume and quality of the services which it renders. But unfortunately it is very difficult for the average citizen who uses one golf course, or a tennis court, or who frequents one swimming center, or whose children use one playground, to get a comprehensive and composite picture of the volume or the quality of the services rendered by the department for the community as a whole. There are in every community, also, many who never come under the influences of any of the services rendered. One of the outstanding weaknesses in park government throughout the country is the failure of the governing authorities to provide for a method of general education of the public except when a bond issue or an increased appropriation is desired. Most park authorities content themselves with making

an annual report to the city council or to the county board of commissioners as the case may be, and only comparatively few of these reports are ever printed and made available for general distribution. A well-organized plan of educational activity would be extremely valuable from two viewpoints: it would more nearly give the governing authority a true and up-to-date insight into the public needs and desires, and at the same time acquaint the people more fully with the facilities and services now available. This subject is discussed in detail in Chapter XIX, "Educational Publicity."

Executive Organization.

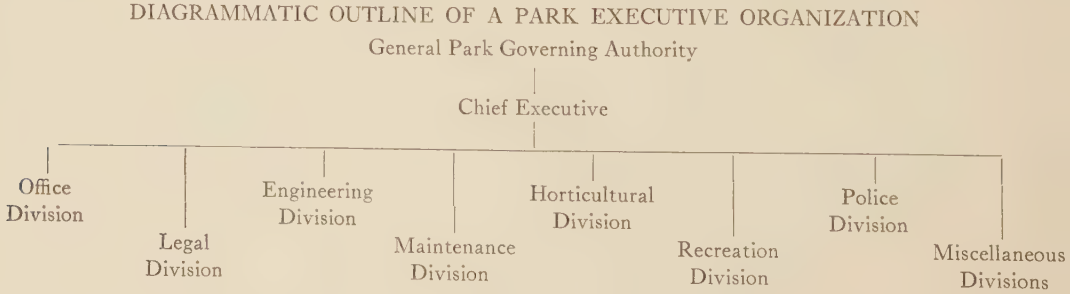
The creation and maintenance of an executive organization is without doubt one of the most important acts of government by a park governing authority. The success or failure of the governing authority will largely depend upon whether it does or does not recognize the value of expert service and sets up an executive organization manned with trained officials. This principle applies to small as well as to large communities. Indeed, because of the versatility demanded of the one or the few executive officials in a small organization, there is even greater need of more widely trained leadership in small communities than in larger ones. Unfortunately this need does not always harmonize with the financial resources available in small communities.

The personnel of an executive organization will comprise a chief executive or superintendent, subordinate officials, the number depending upon the size of the community and the functional services definitely and separately organized, and laborers. From the viewpoint of major functions there is no marked difference between a small park executive organization and the executive organization of a large one, but there is, of course, a vast difference in the number of definite functional divisions into which the departments, respectively, may be organized.

Divisional Organization of a Park Executive Organization

The following diagrammatic outline of the divisional organization of a park and recreation department will serve to visualize some of the various functions which any department, small or large, will perform.

DIAGRAMMATIC OUTLINE OF A PARK EXECUTIVE ORGANIZATION



1. *Office division.* The primary executive function of this division is to keep all the records of the department (records of the governing authority and records of the executive organization), including the accounting system. In some park systems the head of the office division discharges some of the functions of a business manager.

The executive officer of the division is the secretary. For a definition of the duties of the secretary in a few park systems, see by-laws, pages 509, 513, 526. (For a full statement of the organization and functions of the office division, see Chapter IX, pages 552–617.)

In some small systems the secretarial work is performed by the superintendent, or by a member of the park board, or by another official of the municipal government, such as the city clerk. Likewise the accounting for the department may be done by the municipal treasurer or auditor.

2. *Engineering division.* The particular functions of this division relate to the location, acquisition and development of properties. In detail the division will survey and establish boundaries, conduct acquisition negotiations, make topographical surveys, make surveys in execution of landscape designs, and either supervise or actually carry out all construction work. Often preliminary to boundary and topographical surveys, and certainly in between boundary and topographical surveys and actual construction work, there is need of another type of expert — the landscape architect or park planner and landscape architect. It is the function of this expert to make general plans for the system and to make all designs for the development of properties. If the property is to be used for organized recreation primarily, it is desirable to utilize the services of the organized recreation expert to collaborate with the landscape architect in making the design. If there are structures of any consequence to be erected the services of the building architect will be needed.

The landscape architect may be regularly employed by the park governing authority and placed in charge of a landscape division as is the case in some large systems, or experts in park planning may be temporarily employed to make the plans. Even in large park systems the calling in of professional landscape architects is customary. It is wise in such instances to continue their employment in an advisory capacity even after the work is completed. Occasionally municipal landscape architects are found who do necessary work for park and recreation departments.

The recreation expert may be the superintendent of the division of recreation or someone called in from the outside. Building architects are usually called in from the outside, but a few instances are found of an architect being employed regularly by a park department or else employed by the municipal government for services to all departments of the city.

In many municipal park departments and in some county park departments the engineering work is done by the city engineer and the county engineer respectively. In a park department having a regularly organized engineering division the chief executive officer is known as the chief engineer. Except in very large departments where there is a continuous demand for engineering services, this division is likely to be a more or less temporary division, for upon the completion of major construction projects its duties are gradually assumed by the maintenance division.

3. *Legal division.* From the very beginning of the work of a park governing authority, legal advice and counsel are likely to be needed. The law under which the governing authority acts may need interpreting, titles of property must be investigated, contracts of purchase drawn, condemnation proceedings instituted and carried through the courts, deeds to property made out and properly recorded, the terms and conditions of bond issues and sales determined, construction contracts drawn and enforced, rules and regulations formulated and promulgated, personal injury and property damage suits defended, amendments to the law or new laws drawn and presented to the proper legal authorities for passage and similar duties performed. The chief executive officer of this division is known as the counsel or attorney for the department. In many park systems, especially in the smaller ones, the legal needs of the department are handled by the city or county attorney respectively, there being no regularly organized legal division.

4. *Maintenance division.* The functions of the division comprise the upkeep and care of all properties and facilities, the performance of minor construction work, care and repair of all tools and equipment, and responsibility for the storehouse and the storage and issuance of supplies, materials, tools and equipment. The chief executive of this division is the superintendent of maintenance. In small systems this work is usually looked after by the general superintendent directly or by a foreman of maintenance (see Chapter XI).

5. *Horticultural division.* The propagating, planting and care of plants of all kinds used in park work is recognized as a science and an art in itself. While functionally much of the work of this division is closely related to the functions of the maintenance division, it is, in fact, a form of service that requires scientific knowledge, training and skill of a peculiar type. It is quite correctly placed in a separate division in the larger systems. In some systems this division is called the landscape gardening division. In small systems the functions of this division are performed by the general superintendent if he happens to have horticultural training. If the superintendent does not possess this knowledge a gardener is usually employed.

Forestry. In many instances the propagating, planting and care of trees is set up as a special division separate from the horticultural division; and not infrequently, so far as the planting and care of street trees is concerned, set up as a separate municipal department independent of the park department.

Botanical gardens, arboretums, conservatories. Special highly developed horticultural institutions of these types are sometimes carried in large park systems as separate divisions in the general executive organization. Often they are under separate management entirely (see Chapter XII, "Horticultural Division"; Chapter XVIII, "Botanical Gardens").

6. *Police division.* The primary functions of this division include the guidance of the people in the use of the properties and facilities in a park system and the enforcement of the rules and regulations that have been adopted by the governing authority for the governance of the properties. A widespread practice of utilizing the regular city police in policing or guarding municipal parks is now in vogue, a system that is, for the most part, unsatisfactory in the larger systems. In small systems guard functions may quite properly and adequately be performed by the local police officers. In many instances the general superintendent and other employees may perform the functions of this division through being clothed with police power. The executive officer of this division, in systems having independent police or guard forces, is the chief of park police or park guards. (For detailed discussion of the organization and functions of this division, see Chapter XIV, pages 747–791.)

7. *Recreation division.* The general functions of this division comprise the promotion of the use of properties and facilities thereon, and whenever necessary, the leadership of the people in the use of the properties and facilities. In modern park and recreation systems this division assumes a position of the highest importance. Its activities represent the culminating point of much of the activity of the entire department relating to the planning, acquisition, development and maintenance of properties and facilities. While it is true that open spaces in communities, especially in large centers of population, have a value quite apart from their active use by the people, either in an organized or unorganized manner, in their health-giving properties in admitting sunlight and air, in æsthetic values and in the increase of property values in the vicinity of them, these values alone would hardly justify the enormous expense of their acquisition, development and maintenance. The benefits to be derived from an extensively organized and unorganized use of the properties and facilities by the people constitute the basic justification for the energy and expense of their acquisition, development and maintenance. The measure of the success of the

division of recreation in performing its functions is to a very large degree the measure of the success of the entire department.

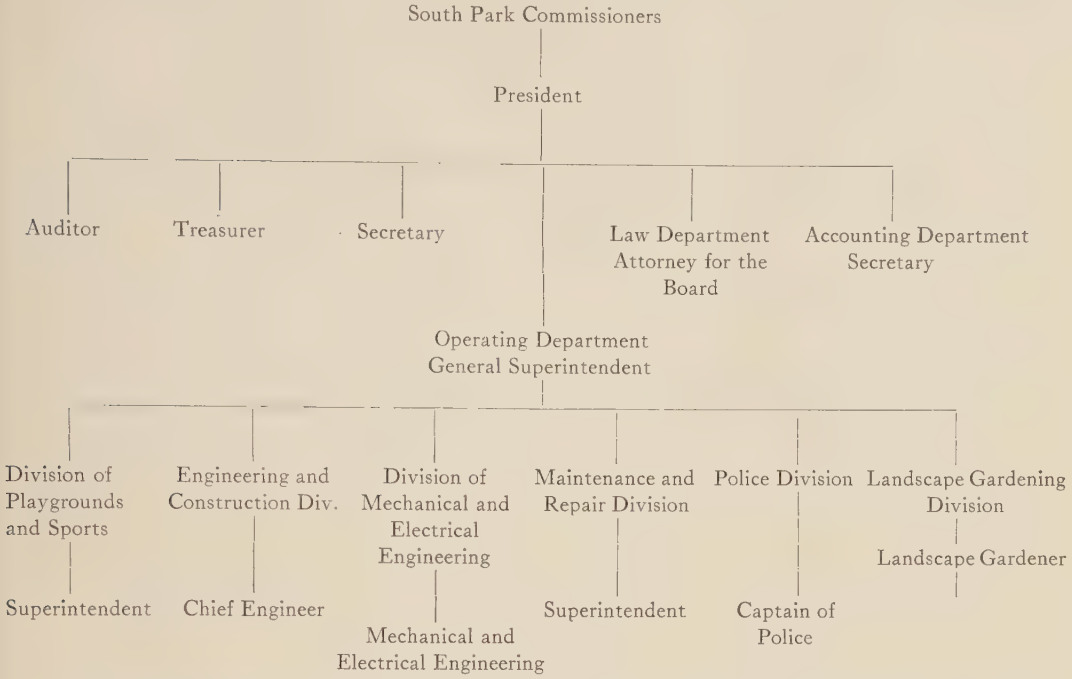
In a sense it is a misnomer to speak of a recreation division within a department; that is, of a "recreation department." The activities of the horticulturist, the director of the zoo, the botanical garden, the arboretum, the aquarium, the conservatory, are just as truly recreational as are the plays, games, sports, music, dramatics and social activities of the division of recreation. This contradiction could be overcome by splitting the recreation division into functional divisions, *e.g.*, the division of children's playgrounds, the division of community athletics, the division of community music, the division of community dramatics and others, as is done in some departments organized as separate recreation departments. Where there is a unified department of parks and recreation the general superintendent or chief executive is, in point of fact, the superintendent of recreation just as truly as the superintendent of the separate department of recreation is a superintendent of recreation. (For a detailed discussion of the organization and conduct of the functions comprehended under the general term recreation, see Chapter XIII, pages 708–746.)

8. *Miscellaneous divisions.* The fact has already been mentioned that forestry, conservatories, botanical gardens and arboretums are sometimes carried as separate and independent divisions in some large park systems. This is also true of zoölogical gardens and aquariums. These are educational-recreational institutions requiring special technical knowledge and skill in management and as such may quite properly be carried in the general executive organization as separate divisions.

In some park systems certain types of services of a public utility character, extensively and highly developed, are classified as separate divisions. Thus in the park and recreation systems of Minneapolis and Hartford the management of the refectory service is organized as a separate division. Golf courses in some systems are similarly managed, although there appears no special reason why golf courses and all other organized active recreation facilities should not be grouped under one general division.

The foregoing outline of the divisional organization of a park executive organization should be taken in a diagrammatic sense only. In actual practice there are as many modifications of this divisional organization as there are systems. In order to show examples of actual practices throughout the country in executive organization a number of organization charts of park executive organizations are presented in the pages immediately following.

ORGANIZATION CHART OF THE SOUTH PARK DISTRICT PARK DEPARTMENT
CHICAGO, ILLINOIS



The president, auditor, treasurer and secretary are known as charter officials, that is, these officials are specifically provided for in the law creating the South Park District and the Board of South Park Commissioners.

The board has the authority to create by ordinance as many executive departments as it deems necessary to carry on the business of the general department. Under this authority the board has created three distinct executive departments, *viz.*, law department, accounting department and operating department, the heads of which are appointed by the board and subject to removal at any time, although the term of their employment usually covers one year.

The duties and responsibilities of these several executive departments as defined by the ordinances of the Board of South Park Commissioners are as follows:

1. *Law department.* There is hereby created the office of attorney. The attorney shall be head of the law department and as such shall have charge of all litigation to which the commissioners shall be a party. He shall give information on all questions and draft all instruments referred to him by the commissioners or any committee or officer thereof, or by the civil service board or any officer thereof.

2. *Accounting department and secretary.* The secretary shall have custody of the corporate seal, and of all books and papers pertaining to his office; shall attest and affix the corporate seal to all instruments requiring such action, when authorized by ordinance or vote of the board, and shall cause all ordinances, resolutions and other actions of the commissioners requiring publication to be duly published. He shall attend all meetings of the commissioners and keep a full and true record of their proceedings. He shall give such bond for the faithful performance of his duties as the commissioners may from time to time require.

Acting under the commissioners he shall have the management and control of the accounting department, and in this capacity shall have charge of the system of accounting and all books of account. He shall appoint according to law all assistants and employees in his department and shall prescribe their duties and supervise their work.

3. *Operating department and general superintendent.* There is hereby created the office of general superintendent. The general superintendent, acting under the commissioners, shall have the general management and control of the operating department. (For full statement of the duties and responsibilities of the general superintendent, see page 538 of this chapter.)

The operating department is organized with the following divisions: (*a*) Engineering and construction division, in charge of a chief engineer. (*b*) Maintenance and repair division, in charge of the superintendent of maintenance and repair. (*c*) Division of playgrounds and sports, in charge of the superintendent of play-

grounds and sports. (*d*) Mechanical and electrical engineering division, in charge of the mechanical and electrical engineer. (*e*) Police division, in charge of a captain of police. (*f*) Landscape gardening division, in charge of a landscape architect.

The scope and functions of these several divisions and the responsibilities and duties of the official in charge of each are as follows:

1. *Chief engineer.* Shall have charge of the engineering and construction service, surveying and drafting, and shall have charge of and be the chief authority over all improvements and construction work. He shall make all designs and plans for improvements and construction except such as may be specially assigned to the mechanical and electrical engineer or architect, and will be responsible for the proper carrying out of all works of construction and improvements, having the necessary authority to prescribe and inspect the methods and materials used. He shall prepare all specifications for construction work, applications for work orders, examine all contracts, and keep in his office proper records of costs and file and record all plans, estimates and other matters pertaining to his division. All officials shall promptly furnish him with such information and assistance as he may require.

2. *Superintendent of maintenance and repair.* Shall have charge of all park maintenance employees engaged in the doing of all work in connection with construction, maintenance and repair throughout the parks and boulevards and other services relating thereto. He shall have charge of the following subordinate services: (*a*) The repair shop and outside repairs, in charge of the master mechanic. (*b*) The horse service, in charge of the stable foreman. (*c*) Boating, in charge of managers at different landings. (*d*) Laundries, in charge of a manager.

He shall be held responsible for making of proper repairs, upkeep, renovation and tidiness of all buildings under his charge, and for the satisfactory condition and appearance of all drives, roads, walks, lawns, water supply, drainage, lake shore protection, inland lakes and surfaces generally throughout the parks and boulevards, and all horse-drawn vehicles and other park equipment not specifically placed under the care of the head of any of the other divisions of the operating department. He shall promptly and efficiently make any repairs and give such assistance from the maintenance and repair division as may be requested at any time by the head of any of the different divisions of the operating department.

3. *Superintendent of playgrounds and sports.* Shall have general charge of the field houses, gymnasiums, playgrounds, swimming pools, bathing beaches, games, races, pageants and other sporting events and contests in all parks and boulevards under the control of the commissioners. He shall have charge of the work required to properly prepare for and carry on the activities placed under his charge and to this end shall have the prompt and efficient assistance of all other divisions and the supervision of the men in doing the things required for the service of his division; the technical methods employed by such men shall, however, be those indicated by the heads of their respective divisions.

He shall examine and report to the general superintendent in writing upon all plans for improvements or alterations in parks or buildings as to the accommodations provided for the services placed upon his charge.

4. *Mechanical and electrical engineer.* Shall have charge of the maintenance and operation of the entire electric lighting system, including the power house in Washington Park, all electric substations, and the heating placed under his charge in all the parks and boulevards and of the pumping stations, the machine shop, garage, motor vehicles, asphalt plant, launches and police boats, chauffeurs and steam fitters and the upkeep and operation of all of the properties and services named, and shall be responsible for the maintenance and good condition of all motor vehicles, launches and police boats. He shall be held responsible for all electrical construction within the parks and boulevards and for the preparation of plans and specifications for such construction, supplies, materials and other things needed for the upkeep of the property and service in his charge.

5. *Captain of police* shall have immediate charge of the police division and all officers and employees therein. He shall see that all his subordinates render satisfactory service to the heads of the different divisions not inconsistent with the laws, ordinances and regulations and the just rights of the public in the full enjoyment of their privileges.

6. *Landscape gardener* shall have charge of all plantation, floral display, nurseries, conservatories and propagating houses in the parks, the employees connected therewith, and the execution of the work necessary for the proper maintenance and upkeep. He will be responsible for the faithful carrying out of all plans in plantation for new construction given him for the development of the park system. He shall also be responsible for the proper preservation of the trees and shrubs and the maintenance of satisfactory conditions in all plantations.

The officials in charge of the different divisions shall be subordinate only to the general superintendent and shall operate their different divisions under his direction. The general superintendent shall make such rules and regulations for the government of the different divisions as he may consider necessary or proper, not inconsistent with the ordinances of the commissioners.

The officials shall be directly responsible for the successful, economical and satisfactory performance of all work and the serving of the public in connection with the operation of their divisions; for the buildings and other property placed in their charge, and for the

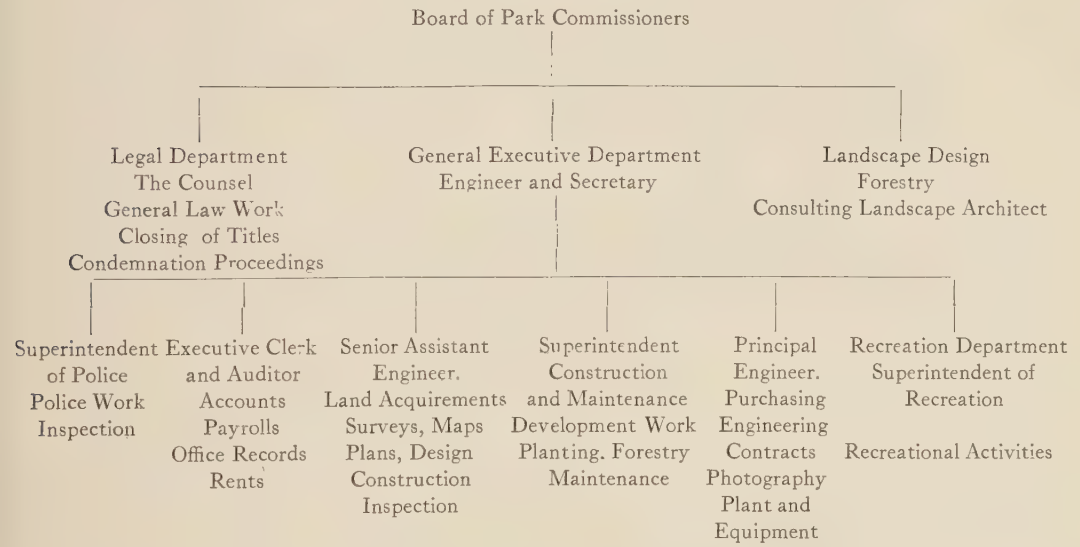
efficient and satisfactory conduct of the officials and employees working under their direction and they shall perform such other services as the general superintendent may from time to time direct.

The official in charge of each division of the operating department will prepare and submit to the general superintendent, when requested by him, a complete statement of, and any suggestions he may have to make as to the existing rules and regulations governing the operation of his division and a chart showing the existing organization of his division, including all the employees thereof and a further chart showing his suggestions as to reorganization of his division, making an estimate of the increase or decrease in annual expenditure.

He will also submit, not later than the eighth day of each month, a written report to the general superintendent, recording the operation of his division during the month, giving such statistics as desirable, care being taken to recite any unusual occurrence or unsatisfactory condition, which report will be transmitted by the general superintendent to the commissioners monthly, with such suggestions and recommendations as he deems wise. He is expected to submit at any time, in writing, any information he may have indicating that the methods, rules and regulations are unsatisfactory, with his recommendation thereon, or reports on any other matters.

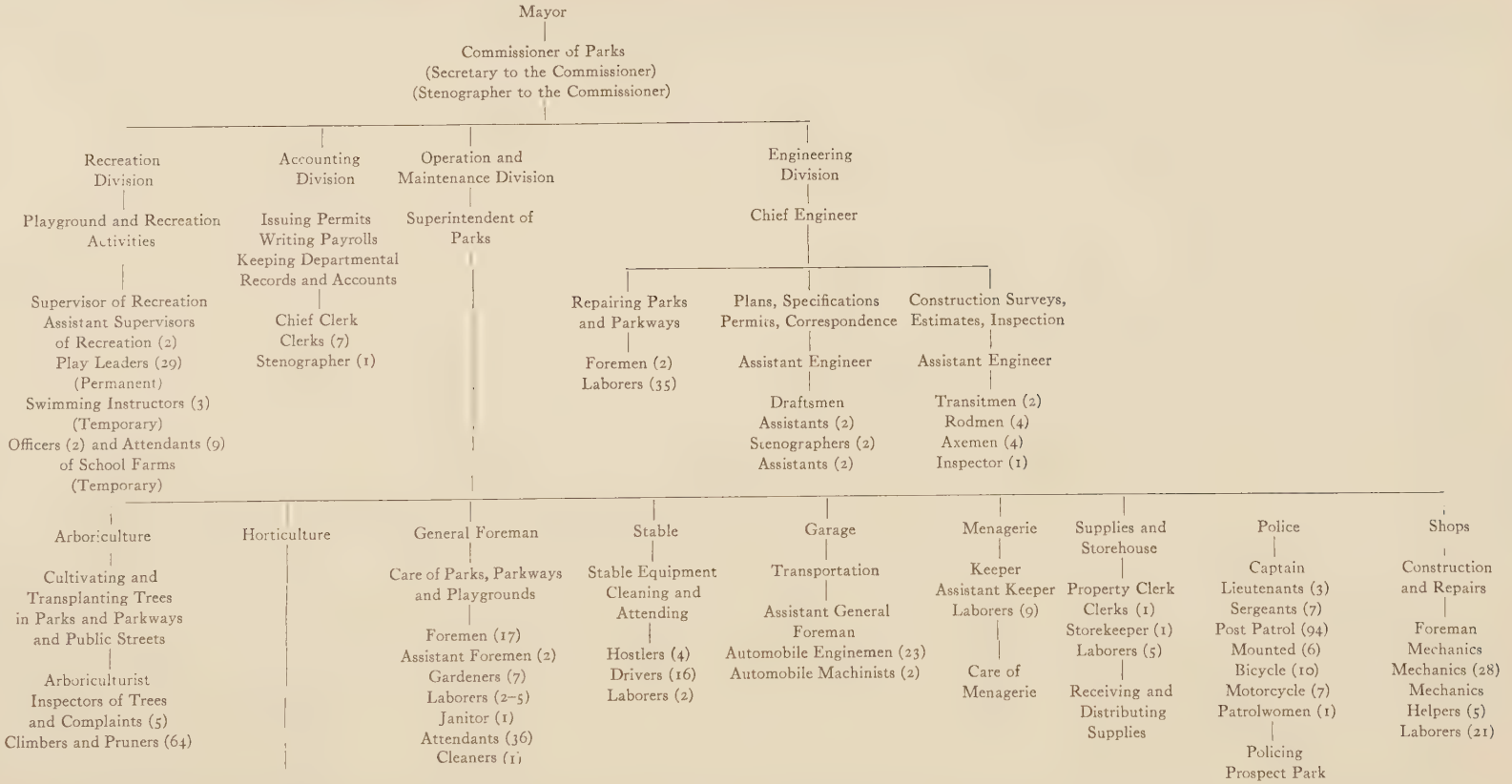
It shall be the duty of the official in charge of each division to call upon any other division of the operating department for such assistance as may be necessary to successfully carry on his work and all officials will promptly respond to such requests and particularly shall this be the case where the service asked is for assistance in giving proper attention to the comfort and convenience of the people in the enjoyment of any of the facilities, games and sports in the parks.—Municipal code of the South Park Commissioners, excerpts from Chapter II, pages 4–11 inclusive, edition 1923. Statement concerning the secretary and the accounting department from Chapter I, Section 4, Municipal Code of the South Park Commissioners, 1923.

ORGANIZATION CHART OF THE UNION COUNTY PARK DEPARTMENT
UNION COUNTY, NEW JERSEY



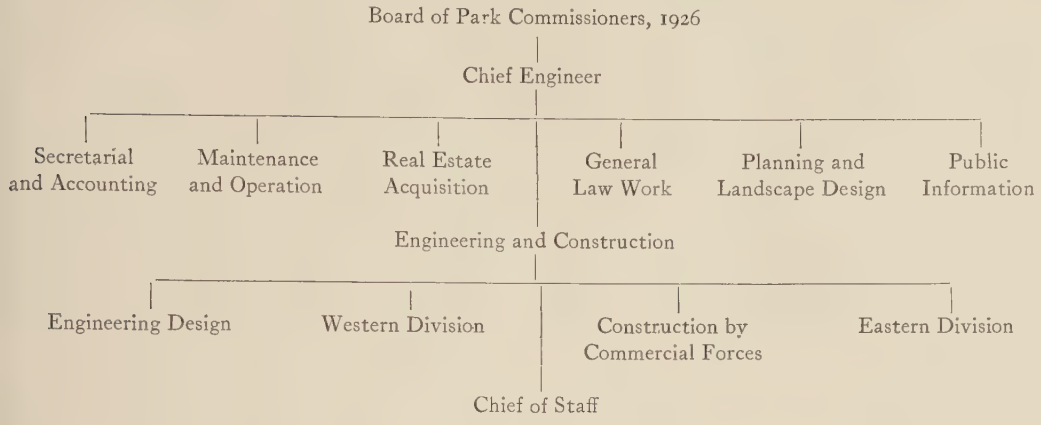
The treasurer of the department is a member of the board. The legal department is directly responsible to the board of park commissioners, as is likewise the consulting landscape architect. The chief engineer or chief executive combines with the office of chief executive that of the secretary. This is one of the ways of overcoming a situation that is, in general, undesirable from an executive viewpoint, *viz.*, of having the secretary a separate official and wholly independent of the chief executive. The prominence of engineers in the department at the present time (1926) is due to the fact that the department is a new one and a great deal of land acquisition and construction work is being carried forward.

ORGANIZATION CHART OF THE DEPARTMENT OF PARKS, BOROUGH OF BROOKLYN, NEW YORK CITY



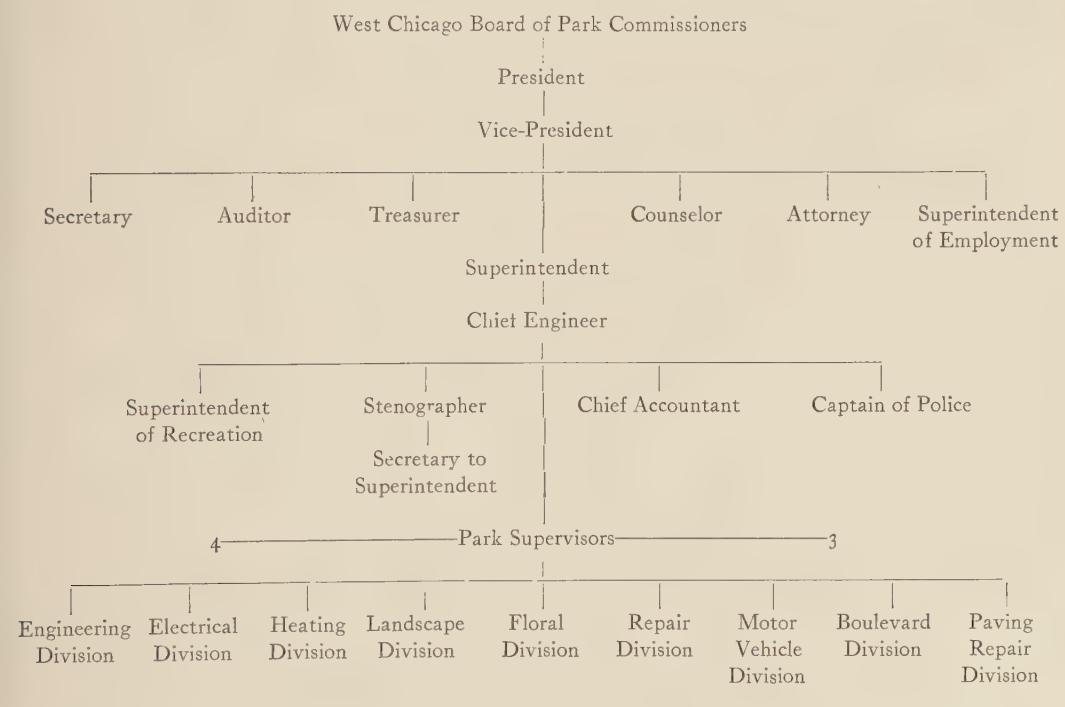
In the Borough of Brooklyn Park Department the average number of per annum employees is 125 and the average number of per diem employees is 548. In New York City there are five borough park departments, each under a commissioner appointed by the mayor. Each of these commissioners acts in the capacity of a chief executive officer. The boroughs of Manhattan and the Bronx each have large executive organizations somewhat similar to the executive organization of the Borough of Brooklyn Park Department. The boroughs of Queens and Richmond have smaller organizations. There is a park board for the entire city composed of the five commissioners. This board exercises no special administrative functions but maintains a staff composed of a secretary, a landscape architect and an assistant landscape architect. The landscape architects are available for services in any of the boroughs. The

ORGANIZATION CHART, WESTCHESTER COUNTY PARK DEPARTMENT
WESTCHESTER COUNTY, NEW YORK



This is another example of an executive organization under a board of park commissioners of a county. As can readily be seen from the chart the organization is largely an engineering construction organization. This is because there is an immense amount of planning and construction work being done. The division of maintenance and operation, in charge of a general superintendent, is still under the control of the chief engineer.

ORGANIZATION CHART OF THE WEST CHICAGO PARK DEPARTMENT, CHICAGO, ILLINOIS



Two distinguishing features of the organization of the West Chicago Park Department are: first, the president functioning practically as chief executive; second, the number of officers directly responsible to the president and the board instead of to the superintendent.

EXCERPTS FROM THE ORDINANCES OF THE WEST CHICAGO PARK COMMISSIONERS RELATIVE TO THE DUTIES OF VARIOUS EXECUTIVE OFFICERS CHAPTER I, SECTIONS 3 TO 14 INCLUSIVE, PUBLISHED BY THE COMMISSIONERS, 1924

Section 3. *Officers. Terms of Office.* The following named officers shall be elected by the commissioners: president, vice-president, secretary, treasurer, auditor, chief engineer, superintendent, superintendent of employment, captain of police, attorney, and such other officers or heads of departments may be selected and appointed by the commissioners from time to time, conformable to law, as they deem advisable or necessary. All regular officers shall be elected at the annual meeting of the commissioners, hereinafter provided for, and shall hold office, unless their terms be sooner terminated, for one year, and until their successors are elected and have qualified.

Section 4. The president shall: (*a*) Be the chief executive officer of the commissioners. (*b*) When present, preside at all meetings of the commissioners. (*c*) Sign all contracts and other documents authorized by the commissioners. (*d*) See that all ordinances of the commissioners are properly enforced. (*e*) See that all orders of the commissioners are faithfully executed. (*f*) Have the general direction of all the other officers of the commissioners. (*g*) Examine all bids and claims against the commissioners and endorse his written recommendation thereon. (*h*) Countersign all warrants authorized by ordinance or by vote of the commissioners. (*i*) Return all orders countersigned by him to the secretary within five days next after having received the same, either duly countersigned or accompanied by a statement in writing of his reasons for not countersigning the same, so that the commissioners may make such order thereon as they deem proper.

Section 5. The vice-president shall: (*a*) In the absence or inability of the president to act, perform all the duties which should be performed by the president if he were present. (*b*) In the event of such absence or inability, be vested with the same powers as the president.

Section 6. The secretary shall: (*a*) Keep the corporate seal and affix the same to all papers which require it, and attest the same with his signature. (*b*) Keep all records and papers belonging to the commissioners. (*c*) Keep a full and accurate record of every proceeding in a journal for that purpose. (*d*) Record all ordinances, orders, rules and resolutions passed by the commissioners in a book to be kept for that special purpose, immediately after their passage and before the next regular meeting of the commissioners. (*e*) Cause due publication to be made of all ordinances or resolutions which require publication. (*f*) Prepare an estimate each year of the commissioners' probable requirements for the succeeding year, and present the same to the commissioners for their consideration and action thereon. (*g*) Purchase all supplies and equipment for the needs of the parks where the amount to be expended does not exceed the sum of five hundred dollars ($500); provided, however, requisition for the same has been previously approved by the president or his authorized agent. (*h*) Be held responsible for the economical purchase of all supplies and material, either made by himself or those authorized by him to do so, and for the obtaining of satisfactory competition in making all purchases. (*i*) Prepare for the commissioners proper and complete specifications and other necessary data required for bids or proposals for necessary work or supplies. (*j*) Perform such other duties as may be required of him by law or imposed upon him by any and all ordinances, orders or resolutions of the commissioners.

Section 7. The treasurer shall: (*a*) Collect and receive all moneys payable to, or belonging to, the commissioners, and keep an accurate and correct account thereof. (*b*) Only pay out such money so received by him upon and for the purposes and to the payee stated in warrants regularly drawn, in the manner provided by ordinances. (*c*) Hold and safely keep all bonds and other securities belonging to the commissioners, and receive and hold the same for such account and purpose as he may, from time to time, be directed by them to do, and to make such delivery or disposition of the same only as he may be directed by warrant and voucher directed to him by the secretary and signed by the president or vice-president when the latter is acting as president, and by the secretary, which warrant and voucher shall be drawn only upon the order of the commissioners. (*d*) Collect all interest as it becomes due upon any such bonds and other securities so placed in his custody, and place the same to the credit of the commissioners upon the treasurer's books. (*e*) Make monthly report of all receipts and disbursements made by him, and submit to the annual meeting of the commissioners a detailed annual report showing all receipts and disbursements of money during the preceding year, and an inventory of all bonds or other valuable property of the commissioners in his hands. (*f*) Give a bond in a penal sum to be fixed by the commissioners, with sufficient sureties acceptable to the commissioners, provided, however, that the amount of such bond may be increased or diminished from time to time by resolution and order of the commissioners.

Section 8. The superintendent. (For duties of the superintendent, see page 538.)

Section 9. The attorney shall: (*a*) Have charge of all legal matters and all litigation to which the commissioners shall be a party, except as they may, in the exercise of a sound official discretion, otherwise direct. (*b*) Draft all instruments requested by the commissioners. (*c*) Give opinions on all questions referred to him by the commissioners or any committee thereof, or by the park civil service board.

Section 10. The auditor shall: (*a*) Audit all accounts of fixed charges against the commissioners, and perform such other duties as to audits as may be assigned him by ordinances of the commissioners.

Section 11. *Additional Officers or Agents in addition to the foregoing list of Officers.* The commissioners may appoint such other officers and agents from time to time and for such periods of time, consistent with the law, as they may deem advisable. Such additional officers and agents shall be appointed at the annual meeting of the commissioners or at such other times as they may deem necessary, and the appointees shall hold office until their successors are elected and qualified, or until the position is abolished by order of the commissioners.

Section 12. *Salaries of Officers.* The salaries of all regular officers shall be fixed at the annual meeting of the commissioners each year, and of all additional officers, agents or employees, at the time of their employment, and shall be payable semi-monthly.

Section 13. *Removal of Officers.* Any officer or agent elected or appointed by the commissioners may be suspended or removed by the president at any time, and all vacancies caused thereby shall be filled by the president for the unexpired term, or the office abolished at any regular or special meeting of the commissioners.

Section 14. All books of record required to be kept by any officer, agent or employee of the commissioners, in which any West Chicago Park District records are kept, shall be the property of the commissioners.

The organization chart on page 528 is an example of a park and recreation organization under a Federal plan governed city. The director of public welfare is appointed by the mayor. The director in turn appoints the commissioner of parks and recreation, who has general executive control over all the divisions of the department. The zoölogical garden is under a separate board of control, of which the commissioner of parks and recreation is a member. The garden is likewise separately financed by special millage tax. Municipal opera presented in the municipal theatre in Forest Park is under the control of a private organization. Tower Grove Park, a park adjunct to the Shaw Botanical Garden, and partially financed from the budget of the park and recreation department, is under the control of a special board or commission. These features do not appear on organization chart, although very important assets in the recreational life of the city.

The chart on page 531 is an example of an executive organization of a park department under a complete council-city manager form of governmental control. An extensive organized recreation program is not carried on for the reason that most of the organized recreation service in Pasadena is provided by a private-public organization known as the Playground Community Service of Pasadena. This organization is jointly supported by the city government and the board of education, each contributing half of the annual budget.

In Sacramento, California, another city manager governed city, there is a department of parks and department of recreation each in charge of a superintendent appointed by the city manager. In Fort Worth, Texas, there is a board of park commissioners and a board of recreation commissioners, each in charge of a department. In each case the commissioners are responsible for the setting up and supervision of executive organizations independent of the city manager.

The organization of the Department of Parks and Boulevards in Detroit is an example of such an organization in a Federal plan governed city. The

ORGANIZATION CHART, DEPARTMENT OF PARKS AND BOULEVARDS, DETROIT, MICHIGAN

City Council

Mayor

Commissioner of Parks and Boulevards. (General Executive)

Accounting Division

All Accounts, Records
Files and Reports
Main Office
Belle Isle Office
City Barn Office

Chief Clerk
Timekeepers
Clerks
Bookkeepers
Stenographers
Telephone Operator

Engineering and Construction Division

Surveys–Estimates
Designs of Bridges
Culverts, Docks
Roads, Sewers
Water Supply

Engineer
Assigned from
City Engineer's Office
Field Party
Draftsmen
Park Dept. Inspectors

Construction
and Alteration
of all the Buildings
in the Department

Supt. of Construction
Master Plumber
Foremen
Carpenters
Painters
Plumbers
Electricians
Masons
Miscellaneous Tradesmen
Laborers

Maintenance and Repair Division

Care and Repair
of all Property in the Department

Aviation Field
Baby Creek
Band Concerts
Belle Isle Bridge
Belle Isle Park
City Barns
City Parks
City Parkways
Campau Woods
Conners Creek
Grand Boulevard
Palmer Park

River Rouge
Supply Depot
Golf Courses
Aquarium
Barns
Comfort Stations
Garage
Ice Plant
and Service
Infants' Rest
Power Plant
Sewage Plant
Zoo

Superintendent
Curator
Chief Stationary Engineer
Chief Bridge Operator
Caretakers
Bridge Attendants
Bridge Operators
Bridge Laborers
Firemen
Foremen
Overseers
Laborers

Superintendent of
Construction
Carpenters
Electricians
Painters
Plumbers
Master Plumber

Forestry and Landscape Division

Care and Preservation
Propagation and Planting of Shrubs
Plants and Trees

Conservatory
Forests
Greenhouses
Nursery
Parks and Boulevards
Parkways
Public Squares
Street Trees

Superintendent

Horticulturist
General Foreman
Foremen
Inspectors
Gardeners
Laborers

Police Division

Police Protection
of all
Parks and Boulevards

Detailed from
Police Dept. of City

Public Service Division

Operates all Revenue
and Producing Activities
Refectories
Athletic Shelter
Bathhouse
Bathhouse Lunch
Boating and Canoeing
Boat Wells and Anchorage
Bungalow
Casino
D. Y. C. Building
Ferries
Golf Courses
Ice Service
Motor Bus Service
Palmer Park
Skating Pavilion

Superintendent
Managers
Bookkeepers
Storekeepers
Cashiers
Collectors
Laborers
Attendants
Telephone Operator

Marine Construction Division

Dredging and Reclaiming
of New Areas
Soliciting Building Excavation
Care and Repair of Dock
and Marine Equipment

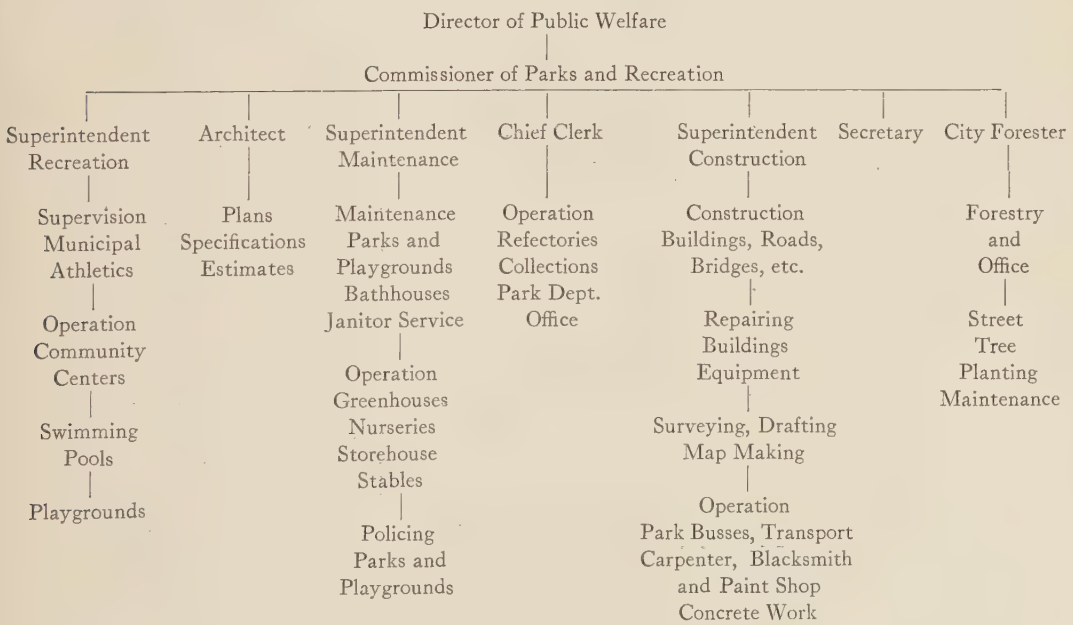
Dirt Disposal Dock
Hydraulic Dredge
Dipper Dredge
Tugs, Scows

Superintendent
Tug Captains
Marine Engineers
Dredge Operators
Dock Foremen
Scowmen
Dock Laborers
Oilers
Firemen
Deckhands

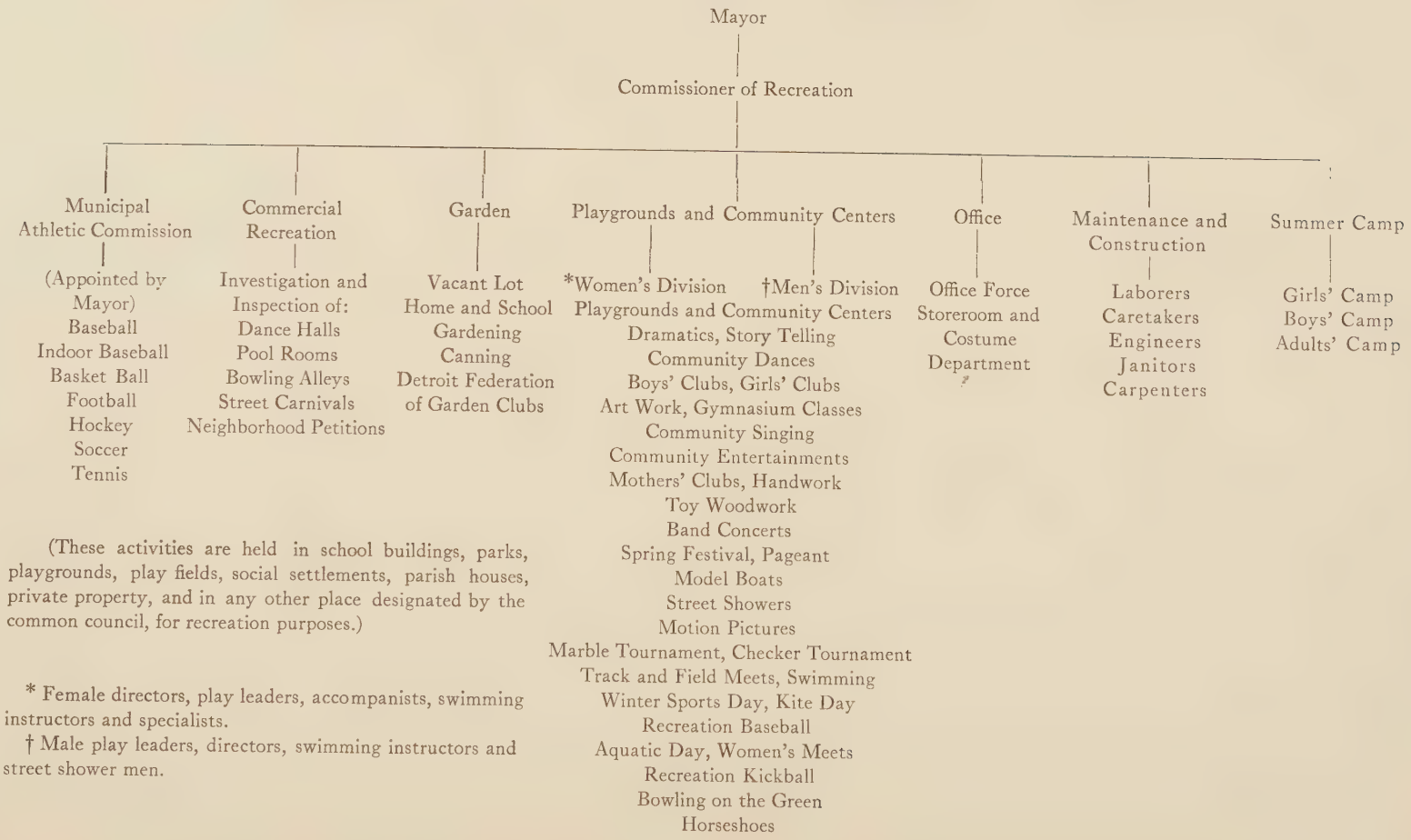
mayor appoints a commissioner of parks and boulevards who is in fact the chief executive of a principal department of the city government. In all matters pertaining to general plans and policies, appropriations, bond issues, etc., the city council acts in the capacity of a board of park and boulevard commissioners. Note that of two general divisions of the executive organization, the service of one, the police division, is wholly supplied by a general department of the city, and another, the engineering and construction division, the service is partially provided by the city engineers' office. This is an example of coöperative service between park and recreation departments and general city departments, especially in these two fields of activity, that is quite common throughout the country. In fact this is more or less the established custom in all Federal plan governed cities, commission, and city manager governed cities. It is a practice that is frequently found in cities where parks and recreation are under a park board or park and recreation board, or a park board and a recreation board.

Another situation in Detroit which requires a high degree of coöperation arises from the fact that there is a recreation department coördinate in rank with the department of parks and boulevards. This department, in addition to using properties and facilities which it directly controls, must of necessity use many properties and facilities controlled directly by the department of parks and boulevards, as well as properties and facilities controlled by other public and private agencies.

ORGANIZATION CHART, DIVISION OF PARKS AND RECREATION, ST. LOUIS, MISSOURI



CITY OF DETROIT, DEPARTMENT OF RECREATION

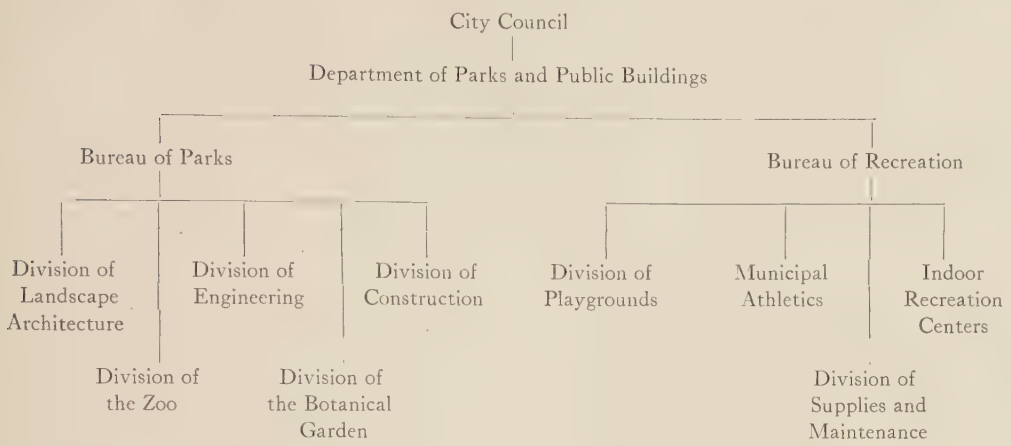


(These activities are held in school buildings, parks, playgrounds, play fields, social settlements, parish houses, private property, and in any other place designated by the common council, for recreation purposes.)

* Female directors, play leaders, accompanists, swimming instructors and specialists.

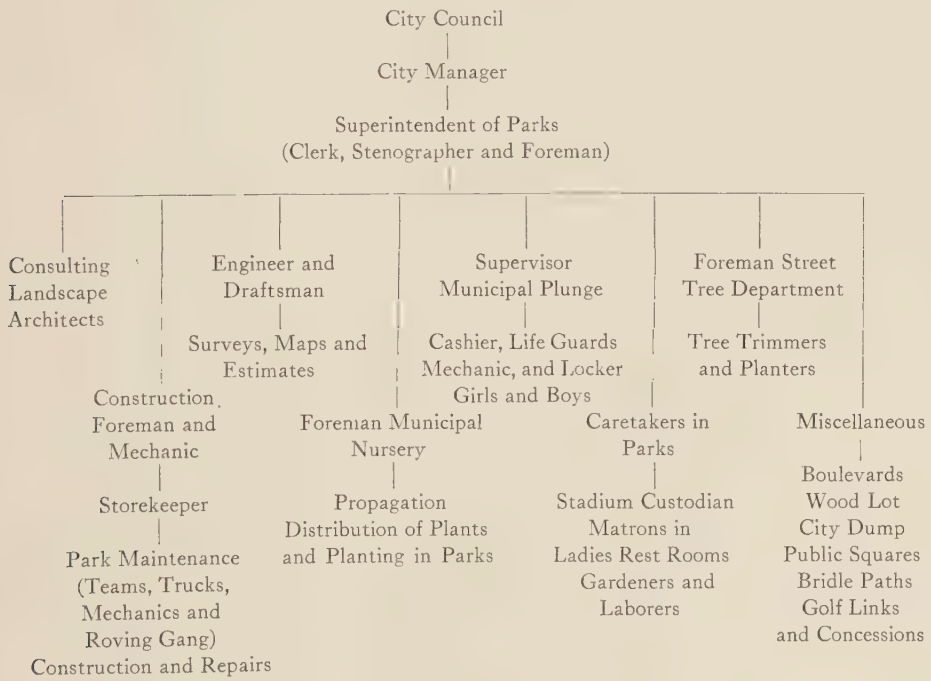
† Male play leaders, directors, swimming instructors and street shower men.

ORGANIZATION CHART, BUREAU OF PARKS, BUREAU OF RECREATION
DEPARTMENT OF PARKS AND PUBLIC BUILDINGS, BUFFALO, NEW YORK

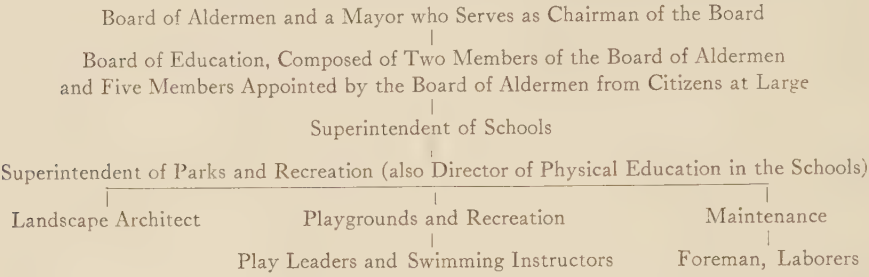


This is an example of the executive organization of parks and recreation in one commission governed city. The superintendent of parks and the superintendent of recreation are respectively appointed by the director of the department of parks and public buildings, who is also one of the elected commissioners of the city. Coördination of the two bureaus is effected through the director of the general department.

ORGANIZATION CHART, DEPARTMENT OF PARKS, PASADENA, CALIFORNIA



ORGANIZATION CHART, DEPARTMENT OF PARKS AND RECREATION
WINSTON-SALEM, NORTH CAROLINA


Board of Aldermen and a Mayor who Serves as Chairman of the Board
Board of Education, Composed of Two Members of the Board of Aldermen and Five Members Appointed by the Board of Aldermen from Citizens at Large
Superintendent of Schools
Superintendent of Parks and Recreation (also Director of Physical Education in the Schools)
Landscape Architect
Playgrounds and Recreation
Maintenance
Play Leaders and Swimming Instructors
Foreman, Laborers

This unusual plan of organization came about for the reason that by far the larger majority of the recreation areas of the city are combined park and school grounds. Of a total of two hundred and sixty-five acres of recreation area only fifteen acres (in one property) is separate from a school site. The budget for the department of parks and recreation is passed directly by the board of aldermen. The budget for the department of physical education is passed directly by the board of education. During the school year the entire program of play and recreation is organized and conducted through the department of physical education. During the three months of summer the program is conducted with moneys from the budget for the department of parks and recreation. The landscape architect and certain maintenance employees in the park and recreation department are employed the year round. In landscape matters pertaining to the development of school grounds outside of recreation areas the landscape architect deals directly with the superintendent of schools. In the planning and development of parks and other recreation areas, he is under the control of the superintendent of parks and recreation who, in turn, reports to the superintendent of schools.

The foregoing examples of departmental and executive organization of park departments are presented only as examples illustrating practices in various cities and counties at the present time (1926). They are not presented as models, although all of them are apparently functioning efficiently in their several fields. Every park governing authority will of necessity develop its executive organization as nearly in harmony as possible with the service needs of the community or area in which it operates as the governing authority views those needs. Where the park governing authorities are in charge of the community recreation program, the executive organization would necessarily include all the various divisions found in the most highly developed park department and in the modern recreation department. The following idealized chart suggests how a park department might include all its own functions and those of the modern organized recreation system. The chart is, as has been stated, merely suggestive and would require adaptation to meet local conditions.

Governing Authority
Chief Executive or General Superintendent
Assistant Superintendent
Division of Children's Playgrounds
Division of Municipal Athletics
Division of Community Music
Division of Community Dramatics
Division of Information and Service
Horticultural Division
Botanical Gardens
Conservatory
Forestry
Division of Zoo and Aquarium
Refectory Division
Police or Guard Division
Office Division
Division of Maintenance
Legal Division
Engineering Division
Division of Architectural Design
Division of Planning and Landscape Design

In the beginning of a new system the service functions as outlined on page 533 would be reversed. Planning and landscape design, design of structures, and construction engineering would come first. These would no doubt require the intensive and active services of the legal division. The office division would at once begin to function also. Probably the next in order would be the maintenance and guard services followed by the various social-recreational features. In an established system the emphasis would be upon the recreational-social-educational services, the services involved in maintenance, legal advice, architectural and landscape planning and design being auxiliary and aids to the use services.

For a large system two assistant superintendents are suggested, one being highly trained in the organization and conduct of recreational-social service activities and the other in those fields of activities pertaining to material properties and equipment. Municipal athletics would include golf, swimming and water sports of all kinds in addition to the usual highly organized major and minor games and sports. The division of information and service would include educational publicity and coöperative services with all manner of private organized groups and institutions and with public agencies and institutions. It might possibly include the operation of community centers, although this could be set up as a separate division. The horticultural division would, of course, include the propagation, planting and care of all kinds of plants used in landscape work in addition to general supervision of special institutions and activities of the types mentioned. Other use divisions might be found necessary, such as a division of municipal camps, a division of handicraft activities including farm gardens, handicraft arts and similar activities.

The Chief Executive or Superintendent

Outstanding park systems in this country are outstanding chiefly because of the character, personality, vision, organizing power, business ability and general efficiency of their chief executives or superintendents. The selection of this official is, without question, one of the most important of the governmental acts of a governing authority. He is the official who must translate the specific and general plans and policies of the governing authority into concrete expression. His is the immediate controlling mind and directing force over all the executive functional services of the department.

Type of chief executive needed in modern park systems. In that period of park-recreation development in the United States when most public recreation areas, in design and treatment, were closely identified with the original definition of a park, it was only natural that the superintendents chosen to head executive organizations should have been men having horticultural

training and experience. In 1890 the number of park areas and the gross acreage of park properties in American cities, even in the larger cities, was comparatively small. Almost universally, with a few exceptions, these areas were wholly landscaped and their use by the people much restricted. During the decade following 1890 a wider social significance of parks began to be realized in terms of a broader interpretation of recreation, but there were no outstanding changes over previous decades so far as the prevailing form and spirit of park service was concerned.

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Since 1890 the emphasis has shifted rapidly toward a larger social viewpoint of the functions of park departments indicated by a wider use of existing properties of all types by the people, the addition of several different types of properties previously not found in park systems, new types of designs of properties providing for many different kinds of activities formerly not contemplated, and the inclusion of new types of workers on the executive staffs. The inception of this new ideal of service also involves a wider range of coöperative relationships. The executive must not only see to it that the properties and facilities under his immediate control yield the greatest possible dividends in terms of human service, but properties and facilities under the control of private organizations and institutions and other public agencies often present additional opportunities for service at slight cost to community funds. He should see and understand in all this that as an antidote to the human ills of modern urban industrial ways of living and working, as a constructive force for releasing the qualities and powers of the people during their leisure time and hence promoting their physical, mental, moral, civic and cultural development, modern park service represents one of the great social achievements of American civilization.

The modern park executive should first of all, then, be a student and interpreter of the social needs of the people, in so far as these needs can be met through their leisure time. He must not only be a student and interpreter of these social needs, but in addition he must be a promoter, a leader and organizer of the people in a great variety of activities designed, on the one hand, to remedy the human ills resulting from the inherent defects of abnormal living conditions, especially in urban communities, and on the other hand, to aid the people to gain a greater measure of happiness in living and a "more expressive life for all."

The acquisition of every piece of property, every step in the development of properties, every piece of equipment placed therein, the use of every dollar of money expended, must be predicated upon the above principle and ideal. Coincident with expanding functions and consequent increase in properties and facilities and activities, larger sums of money are being invested yearly in recreational service. The detailed expenditure

of these funds is largely in charge of the chief executive. He must prepare the budget for the consideration of the governing authority, must see that every dollar is properly accounted for and be ready to give an intelligible explanation of where, how and why the funds were used. All this involves business ability of a high order. It is desirable, therefore, that the modern chief executive have training and experience in business organization and management.

With respect to technical training in landscape design, horticulture, construction engineering and other technical subjects, it is desirable that the chief executive be trained and experienced in at least one of these fields, preferably in either horticulture or construction engineering. A knowledge of the other fields of technical knowledge involved in park services of the above types is very desirable to the extent, at least, of knowing principles, terminology and the character of the operative processes involved.

In handling the affairs of the executive organization in general the executive must be a capable organizer and administrator, and possessed of personal qualities that inspire confidence and loyalty in subordinates. The executive who is unable to transmit to his subordinates something of his own vision, ideals and enthusiasm is unfit to be a chief executive. As to that intangible quality or qualities called personality, which plays so large a part in making the successful executive, nothing can be said except that personality qualities are born, not made, and while the efficiency of anyone possessing the personal qualities of a leader, organizer and administrator can be greatly increased by training in one or more of the several fields of functional services under his charge, no amount of training will make a successful executive of anyone lacking these personal qualities. (For a detailed consideration of the training of executives, see Chapter XX.)

How and where to secure executives. How and where to secure executives of wide social vision, of personality, and a high degree of organizing and administrative ability, to say nothing of technical training in one or more of the functional services involved in handling the affairs of a modern park system, is one of the most important problems in the park movement in America today. Some of the most capable executives in charge of systems today have come from the field of engineering, others are landscape architects, others horticulturists, others were trained recreation leaders and some have had no special training in any of these fields. At the present time there is no higher institution of learning that is specifically giving a course or courses for the training of park executives. Many are giving courses for landscape architects, horticulturists, engineers, business administrators and organized recreation leaders. There is not a consensus of opinion

as yet among the park executives of the country as to what the content of such a course of training should be. For the past several years the American Institute of Park Executives has had a committee working on this subject, but the successive reports and recommendations of this committee have never been adopted by the institute. Some of the training schools for landscape architects are broadening their courses to the extent of including certain courses in social-recreational organization and leadership for those students intending to enter park and recreation service. The Playground and Recreation Association of America inaugurated in the autumn of 1926 the National Recreation School for professional graduate training of recreation executives. The courses offered by this school will be exceedingly helpful in providing the training for the recreational features of the park superintendent's responsibilities. It is possible that to these courses will be added elementary work in performance of horticulture, landscape design and construction as related to the development of parks and other recreation areas.

One possible source of future executives is from the ranks of subordinates now in existing systems. Even if there were schools designed especially for the training of executives, this source of securing executives should never be overlooked. In all well-established park systems it should be one of the duties of both the governing authority and of the existing executive to have one or more subordinates in training for the general executive's position. For various reasons there is a considerable turnover in the ranks of park executives, and it is often wise for a general executive to make a change after five or ten or fifteen years of service, or sooner if a better opportunity offers. It should be held as a signal failure of a general executive if, at the end of five years as a minimum, he has not at least one subordinate who is more or less prepared to take his place. Experience is the best of all teachers, and training through experience in the services of a highly developed, well organized system is one of the best possible places for preparation for executive work. In one of the most highly developed and organized recreation systems in this country the first superintendent and the board adopted a policy of employing one or more subordinates with marked executive possibilities. The successor to this superintendent was trained in the department. The second superintendent, when going to a larger field of work, was succeeded by a third trained in the department. Promotion from the ranks should always be on merit solely and not because of political influence as has sometimes happened in park and recreation systems.

Because the training of subordinates is not widely practiced in park and recreation systems throughout the country, governing authorities generally have to go outside the system for executives. In selecting executives

for newly organized systems this of course is obligatory. In such cases the appointing authorities may consult the office of the American Institute of Park Executives, the Personnel Bureau of the Playground and Recreation Association of America (especially for organized recreation executives), or the officials in well established systems throughout the country for suggestions and recommendations. In some communities the appointment of a general executive is under civil service. In those systems where the governing authority is elected by popular vote, or appointed by a superior authority subject to election, every two or four years, as in commission, Federal plan and city manager governed cities, civil service is a measure of protection to the general executive. This method of selection is not generally practiced in systems governed by boards or commissions, nor is it generally approved by park authorities. Wherever practiced, the opportunity to take the examination should be open to candidates from any section of the country instead of limited to the local community or the state in which the local community is situated.

Powers and duties of the chief executive. The powers and duties of the chief executive are usually stated in the by-laws of the governing authority. Sometimes they may be stated in the organic law (charter) of the municipality. The following are a few examples of the definition of the powers and duties of the chief executive as stated by some governing authorities.

1. *South Park System, Chicago, Illinois.* (Municipal code of the South Park Commissioners, Chapter II, Section 7, 1923.)

(*a*) The general superintendent, acting under the commissioners, shall have the general management and control of the operating department and in this capacity shall have charge of the operation, maintenance, repair and extension of all structures, grounds and waters over which the South Park Commissioners have jurisdiction.

(*b*) He shall appoint, according to law, all assistants and employees in his department and shall direct and supervise their work.

(*c*) He shall, under the South Park Commissioners, have charge of all purchases of materials, tools, implements, supplies and the collection of proper specifications and other data for advertising for proposals on contracts.

(*d*) He shall have charge of the storehouses and of the employees connected therewith and of the maintenance of property and adequate stocking of the storehouses with materials and supplies necessary to meet the demands, and will be held responsible for the tools, implements and supplies held in store and for the accuracy of the accounts of the storekeeper and the maintaining of inventories.

(*e*) He will be held entirely responsible for the economical purchase of all supplies and materials, either made by himself or those authorized by him in writing to do so, and for the obtaining of satisfactory competition in all cases.

(*f*) It shall be his duty to see that no purchases are made on requisition for materials, supplies, tools, implements or other property, the cost of which will exceed $500, without advertisement, the bids to be opened by the South Park Commissioners.

(*g*) It shall be his duty to supply promptly either from the storehouse or by purchase all the materials, tools, implements and supplies requisitioned for by the different park officials. Purchases are to be made only on properly prepared requisitions approved by him.

(*h*) It shall be his duty to examine the proposals received on advertisements, and to prepare a comprehensive, tabulated statement of such proposals and to obtain from the heads of the different divisions reports on the character and value of the work, material and implements offered in the proposal.

This statement embodies most of the fundamental principles of good executive organization, which include:

(*a*) Complete charge of operation, maintenance, repair and extension of all structures, grounds, waters, etc., over which the governing authority has jurisdiction.

(*b*) Power to appoint his subordinates and to order and direct their work (subject in this instance to a civil service law).

(*c*) Power to purchase, care for and control the use of all tools, equipment, materials and supplies used by the executive in the conduct of the business of the department. This is based on the principle that a trained executive knows better than anyone else what tools, equipment, supplies and materials he will need, how to care for them and how to handle their use.

(*d*) Absolute responsibility for the handling of funds allocated to the use of the chief executive.

In the South Park organization two major departments are not under the control of the chief executive, *viz.*, the legal department and the accounting department, each of which is directly responsible to the governing authority. From the viewpoint of governmental organization there are some very good reasons for this arrangement, and from the viewpoint of executive organization there can be no serious objections.

2. *West Chicago Park System, Chicago, Illinois.* (General Ordinances of the West Chicago Park Commissioners, Chapter I, Section 8, 1924.)

(*a*) The superintendent shall have full and complete charge of the use, housing, preserving, maintaining and repairing of all park property, real, personal and mixed, together with all the improvements thereon; and with the use, maintenance and preservation of all waters, boulevards, streets, water craft and boats over which the commissioners have jurisdiction; subject, however, to the approval, order and direction of the president.

(*b*) From time to time make such specific rules and regulations as he may deem advisable for the purpose of protecting said property and of carrying out and enforcing all the ordinances, orders, resolutions and rules of the commissioners relative thereto, subject, however, to the approval of the commissioners.

(*c*) Have control and direction of all departments in all the parks, subject, however, to the order, control and direction of the president, with supervisors under and subordinate to him assigned to certain parks in and of the West Chicago Park District, who shall report to him; but the employees of the respective park or parks shall report to the supervisor of the particular park or parks wherein said employees are employed.

(*d*) From time to time, in conformity with the park civil service law and all amendments thereto, and in accordance with the rules and regulations which may be passed from time to time by the park civil service commissioners, appoint and dismiss such clerks, assistants and other employees as the good of the service may require; subject, however, to the approval of the superintendent of employment. Nothing in this section, however, shall be construed or understood as conflicting or interfering with, or in any degree, diminishing the power of the president over all employees, and particularly his power and authority to remove officers and employees.

(*e*) Make such rules and regulations as he considers advisable, subject to the approval of the commissioners, for the regulation and control of all parks under the control of the commissioners, boulevards, parkways, driveways, streets, walks, waters, field houses, conservatories, playgrounds, boats, bathing and all improvements thereon, and shall permit no trespass upon, or interference with, any part thereof, except upon permits issued by him and upon the conditions and terms imposed therein.

(*f*) Approve requisitions for all supplies and equipment for the physical needs of the parks.

One disturbing factor in this otherwise excellent statement of the duties and powers of the chief executive is the constant reiteration of the supreme executive power of the president. Under the board or commission type of governmental control no superintendent or chief executive, from the viewpoint of good executive organization, should ever be subjected to the complete dominance of a single member of the board, even though that member is the president. This is especially true with respect to the employment and discharge of subordinates. All the responsibilities of the superintendent should relate only to the commission as a whole.

3. *Birmingham, Alabama.* See by-laws of the park and recreation commissioners, Section 6, pages 509–510.

One possible source of weakness in the executive set-up of the Birmingham Park and Recreation Department, from the point of view of a unified executive organization, is the complete separation of the office division from the control of the superintendent. The secretary, in charge of the office division, is directly responsible to the board. In addition to his work of keeping general records and looking after the accounting system, he is the purchasing agent of the board and as such also has charge of the storehouse and the issuance of all supplies, tools, materials and equipment. It is conceivable that this arrangement might cause the chief executive or superintendent no end of annoyance and trouble. On the whole this statement of the duties and powers of the general superintendent embodies most of the fundamental principles of good executive organization.

4. *Park and Recreation System, Nashville, Tennessee.* (Rules and regulations governing employees, manual of the Board of Park Commissioners, page 52.)

(*a*) The superintendent of parks shall have charge of the work assigned to him, and shall be governed by such regulations and instructions as shall be prescribed by the board.

(*b*) The superintendent shall select such foremen as may be required in accordance with their efficiency, and shall direct all work and is vested with power to discharge any employee, except the police force, not engaged in executive work.

(*c*) He shall attend the regular meetings of the board and shall make a report in writing upon all matters requested by the board.

(*d*) He shall keep a "force book," which shall show the name and place of residence of every member of the park force, with the date of his joining and leaving the same.

(*e*) He shall cause to be read and explained to the members of his command all general orders, and all decisions of the board in case of complaint against members of his command.

One feature in the above definition of the powers and duties of the superintendent which appeared only by implication in all the other examples presented is the obligation of the superintendent to attend the regular meetings of the board. This is a highly desirable practice in all systems under board governmental control.

In the Nashville Park System, the secretary, by order of the board, is in fact the executive officer of the board and not the superintendent of parks,

a situation that may practically arise in any system where the secretary is not an integral part of the executive organization, whether by order of the board or not.

5. *Sacramento, California.* (*a*) Park Department. (Charter of the City of Sacramento, Article XIV, Sections 137 and 138.)

(*a*) The superintendent of parks shall have control and management of all land and water parks, parkways, squares and public pleasure grounds, and of the landscape of all cemeteries owned or controlled by the city of Sacramento, and of all grounds surrounding public buildings of the city with the exception of the school grounds, and of properties now or hereafter acquired or set apart for recreational areas and children's playgrounds.

(*b*) Shall have power to plan, lay out and locate driveways and regulate traffic in, and have the care and improvement (except as to the construction, paving and maintenance of driveways) of all parks and all parkways owned or controlled by the city, whether within or without its limits.

(*c*) Shall have power to make rules and regulations for the conduct of the officers and employees of the department and to prescribe the duties of the same.

(*d*) To plant and exercise supervision over all shade trees, shrubs and plants of all kinds on or in the streets and public areas and about the public buildings of the city, except school buildings.

(*e*) To make and provide for the enforcement of rules and regulations as to the use of the parks and other pleasure grounds and the highways thereof by the public.

(*f*) To improve and adorn the parks and other public grounds and do all things necessary and proper to render them of the utmost value to the public.

(*g*) To prepare, in conjunction with the engineering department of the city, the plans and specifications for the erection of all buildings and other structures to be erected within the parks or on public grounds pertaining to park purposes, provided that the preparation of plans and specifications of any such buildings or structures may, subject to the approval of the city manager, be assigned to a practicing architect.

These quotations from the charter of the city of Sacramento are illustrations of the definitions of the powers and duties of the chief executive officers of a park department operating under the general supervision of the city manager.

For additional examples of such definition of powers and duties in the organic law of a city, see copies of the charter provisions of the charter of the city of Detroit relating to the commissioner of recreation and the commissioner of parks and boulevards, Chapter VI, pages 431–433.

Relation of superintendent to governing authority. The important factor in the relation of the superintendent and the governing authority is for the governing authority to give the superintendent a free hand, within the limits of the policies laid down by the governing authority, to organize and carry on the affairs of the department as long as his efforts produce the results expected by the governing authority and as long as they meet with the general approval of the public. In no other way can a superintendent do his best work. In no other way will a governing authority receive the full benefit of the originality, resourcefulness, initiative, technical knowledge and skill of the superintendent.

There will be, of course, constant action and interaction between the superintendent and governing authority both as to governmental functions and executive functions. Out of the suggestions of the superintendent will

no doubt come many of the formal plans and policies of the governing authority. Conversely, a governing authority may be of very great aid to the superintendent in purely executive functions. This is especially true if the governing authority happens to have one or more members (as in the case of a commission) who is technically trained in some particular executive service or services, or has had wide experience in handling executive problems similar to the problems facing the superintendent. The wise executive will welcome such assistance.

Relation of superintendent or chief executive to his staff. The discussion thus far has been concerned chiefly with the relations which the superintendent or chief executive bears to the governing authority. In this relationship the superintendent is the servant to do the will of the governing authority. In carrying out the will of the governing authority an entirely new set of relationships begin, involving relationship to staff employees, program of activities and a relationship to the entire community. Relationship to the staff begins with the act of employment. It has already been indicated that in a properly ordered executive organization the superintendent should have authority to employ his subordinates, whether these subordinates be skilled or unskilled, full time or part time workers, and the authority to discharge them.

The superintendent will be limited in the act of employment by the policy of the governing authority with respect to type and number of each type of employee; and he may be further limited by the rules and regulations of the civil service laws prevailing in his municipality or county. The rates of pay will also be determined by formal resolution of the governing authority or by the rates prevailing in the municipal government as a whole, fixed either by council or by the civil service commission. Where a superintendent has direct freedom, subject to the policies of the governing authority, to select his subordinates, he has the best possible opportunity to show whether he is fit to be a superintendent or not. If he displays poor judgment in selecting the various types of employees needed he is a misfit and would better resign, for the success of the entire executive organization depends very largely upon the quality of the staff.

Civil service. In most of the larger park systems throughout the country, and in many of the smaller ones, the selection of employees is made through the civil service. There has been a good deal of criticism among park executives of this method of employment. It is asserted that the customary examinations conducted by civil service commissions cannot gauge personality which is so important a factor in several different branches of park and recreation service; that it is exceedingly difficult to get rid of an employee that happens to be a misfit, and that certain types of workers

who deal largely with the human element in society have to be bound by minute technique and rules and regulations which apply to unskilled workers or workers whose duties do not bring them intimately into contact with the public.

There is in reality very little basis for these criticisms. Practically every civil service department is more than willing and anxious to work out with superintendents and governing authorities the employment problems confronting them. Some of the civil service laws specifically provide that the employing authority can be called upon to assist in conducting examinations or actually conduct the examinations, during the course of which he would perhaps have a better chance to study the various applicants than if he were to meet them for consultation outside. The civil service procedure has the advantage of orderly and scientific consideration of the various points of qualification. Practically every civil service law provides for a period of probation of from six months to one year, during which time any employee can be dropped without cause being assigned. Surely within this period any observing superintendent or supervising officer can determine whether any given employee is a misfit or not. It is only just and right that any employee that has passed the period of probation successfully should be given real reasons for his discharge and the right to a hearing before an impartial tribunal if he so desires.

The selection of employees through civil service is on the whole a distinct advantage to a superintendent. Some of the reasons why this is so are: (1) It frees him from the political pressure which was so annoying to superintendents in the time before the introduction of civil service and to those superintendents today in communities where civil service is not practiced. (2) It provides him with an orderly and fairly scientific method of selecting employees. (3) It aids him in establishing a system of job analysis, the establishment of which forces him to make a systematic, detailed study of the requirements of each position and the type of person or persons who ought to be secured to fill the position acceptably. (4) It provides him with a proper classification of employees and a system of rating their efficiency. (5) It provides him with a method of orderly promotion. (6) It gives him a real safeguard in handling payrolls.

In addition to these advantages he can secure from the civil service department assistance in: (1) Methods of promoting and organizing the instruction of new employees. (2) Establishing standard policies in respect to working conditions, health and safety. (3) Establishment of standard practices in regard to hours of employment, vacations, holidays and sick leave. (4) Methods of transfer rather than the discharge of employees who are unsuited for their positions. (5) Carrying on research for the purpose of improving the administration of employment problems.

From the viewpoint of the employee civil service has the advantage of: (1) Providing him a reasonable security in tenure of employment. This often is more theoretical than real, since an employee or a group of employees can be dropped by the governing authority abolishing the position. (2) Freeing him from the necessity of playing politics in order to hold his position. Most civil service laws specifically order that employees shall not participate in political activities, or be assessed or make contributions toward the support of any political organization or campaign. (3) Securing promotion by an orderly process where through his own efforts at study or keen observation and practical experience he fits himself for a higher and larger field of work. (4) Providing him with a means of securing an impartial hearing in case the employing officer for an unjust reason attempts to discharge him.

In order to get the best results from the civil service method of employment in filling positions requiring technical training and experience of the employees, it is highly desirable that competition be open to applicants from a far wider radius than the local community. The smallest possible unit should be the state, and it would be better if competition was open to applicants from the entire country. The highest welfare of the service is often defeated if only citizens of the local community are allowed to become applicants. In making promotions the rule of seniority should not be too strictly adhered to. A subordinate who, by diligent study, close application to his work, exercise of his powers of observation and accumulation of practical experiences, fits himself for a larger responsibility, should not be denied the chance to assume this responsibility over a senior if the senior has merely been a time server and made no special effort to increase his efficiency.

Services requiring very high technical qualifications, whether of a purely temporary or permanent nature, in an advisory capacity, such as may be rendered by a landscape architect in planning a park and recreation system and designing of properties, or a building architect in designing important structures, or an engineer in designing important construction projects, or an organized recreation expert in setting up an organized recreation system, should not, as a rule, be subject to civil service. The governing authority and the superintendent should have perfect freedom to go anywhere to get the best possible assistance available.

Because of the seasonal or periodic nature of park service, it will always be necessary in practically every park system to employ various types of workers on a plan other than a per annum basis. This is especially true in organized recreation, horticultural, policing and general maintenance services. In periodic construction work also this will be true. A civil service

department may carry special lists from which part time workers can be drawn whenever needed or a special arrangement may be made whereby the appointing authority in the park and recreation organization may appoint such workers directly.

The superintendent and his department heads. From the time of employment there is a more or less constant contact between the employees and the superintendent. The most intimate contact will naturally be between the superintendent and the heads of the various functional divisions into which the department is organized. Just as the superintendent receives his general and specific instructions from the governing authority, so he in turn must determine the policies and plans for the organization and conduct of the executive work through his subordinates. These may be embodied in general rules and regulations promulgated by him for their guidance, in written orders issued from time to time, and in verbal instructions.

Just as the governing authority should not concern itself with the intimate details of executive activity, so the capable executive will not attempt to follow every detail of the work of his subordinates. Every chief subordinate should be judged primarily by the results of his work, so long as his methods square with general policies. Every chief subordinate should feel that he will have the chance to use what originality, initiative, resourcefulness and knowledge he has. Every man, no matter how limited his capacity, likes to feel himself a creator. His dignity and self-respect depend upon possessing this feeling. His interest and enthusiasm are based upon this. Any superintendent who meddles constantly with the intimate details of the work of his chief assistants not only renders himself incapable of functioning efficiently in the larger phases of executive administration, but at the same time destroys the spirit of his organization. To do this is the sure sign of an executive of small capacity. Assistants to chiefs of divisions should be required to look to their chiefs for instructions and for supervision, and not to the chief executive or superintendent. However, it is wise for the superintendent from time to time to keep an eye on the efficiency ratings and actual efforts of employees of all grades in positions requiring the exercise of skill with a view to discovering individuals of capacity for larger responsibilities.

One of the major executive problems of the superintendent will be the maintenance of harmonious working relationships among the heads of the several functional divisions of the executive organization. While each separate division represents a special type of service, or types of services, each division is somehow related to every other division and there will be absolute necessity for close coöperation among them. This question of coöperative relationships is so fundamental that it is sometimes made the

subject of a special statement of policy by the governing authority, as in the case of the code of the South Park Commissioners in Chicago (see page 523). Coöperative relations among the several divisions may be greatly facilitated if the superintendent, in defining the duties of the several divisions, includes explicit directions as to the services which each division is to render the other under given circumstances. However, it will not be possible to foresee all the contingencies which will arise and old directions may be forgotten. It is desirable, therefore, that the heads of all the divisions be formed into a kind of cabinet and that regular weekly, bi-weekly or monthly meetings be held under the direction of the superintendent. At these meetings the instructions of the superintendent can be given and all problems of a common interest can be presented, discussed and decisions made if definite decisions are necessary. In these meetings the utmost frankness should prevail but always in a friendly and impersonal spirit. A similar organization of the staff of each division employing a number of skilled workers would likely be found to be most helpful in the conduct of the affairs of the division. Thus in the division of organized recreation with a staff composed of supervisors, play leaders, leaders of special activities, and others, regular weekly meetings are a practical necessity. These meetings not only serve as a time saver to the head of the division, but they accomplish the far greater purpose of promoting mutual acquaintance among the members of the staff, and provide the medium whereby the lowliest members of the staff can gain a vision of the essential unity and the scope of the entire program of activities.

In addition to regular meetings of the superintendent's cabinet and of the staffs of divisions, any superintendent can improve the quality of his executive organization by organizing and conducting short course training classes for various types of workers. It makes no difference how carefully workers have been selected or how well qualified they may have been at the time of selection, there is no single member of the general staff occupying a position requiring skill, to a greater or less degree, in some particular field of activity who cannot improve himself by systematic study and instruction. This applies particularly to the staffs of those divisions whose functions bring them constantly into intimate contact with the public such as the organized recreation division staff and the police division force; but such courses would be of decided value to horticultural workers and office workers also. (See Chapter XIV, "Park Policing," pages 760–769, for suggestions for a course of training for park guards or police; Chapter XIII, pages 742–743, for suggestions for training courses for organized recreation workers.)

The custom followed by some business organizations of holding an annual picnic and an annual dinner followed by a social good time, the

organization and conduct of the affair in each case being largely in the hands of the employees themselves, is a custom that may profitably be imitated by a park and recreation executive organization. In fact, these occasions should be departmental affairs, including the governing authorities as well as the members of the executive organization. This is merely practicing in a limited way what the organization is doing daily for the general public. As a means of fostering mutual acquaintanceship and good will, and that intangible thing called the spirit of the corps, affairs of this character have great value.

Personal contacts. All that has been said heretofore concerning the relation of the chief executive or superintendent to his staff has been considered from the viewpoint of group contacts. This phase of the administration of an executive organization has been emphasized because of its fundamental importance in facilitating the conduct of the business of the organization, and because it is only in this way that the workers can secure a clear and comprehensive vision of the aims and purposes of the entire organization and of the relationship that each individual group bears to the whole and to each other divisional group. Aside from dealings with the staff on a group basis, many personal questions will arise which will have to be handled by personal contact between the superintendent and chiefs of divisions and perhaps with individual members of the staffs of divisions. These questions may involve matters relating to the internal organization and conduct of divisions, problems which will be solved by the individual chiefs of divisions and the superintendent in conference either in the office or in the field or both, or they may involve matters pertaining to transfers, promotions, discharges, discipline, or personal difficulties, outside of work problems, of individual workers. The good executive is more or less in the position of a foster father to his assistants of all grades if he has their liking, confidence and respect.

In dealing with employees below the grade of division chiefs, care should be taken that the division chief is always made acquainted with the nature of the contacts between the superintendent and the worker, otherwise the authority of the chief may be easily undermined and the system be disorganized. In all personal contacts with members of his staff the superintendent should have and manifest a genuine, sympathetic interest both in the individual and in his problem or problems. If assistance can be given it should be given promptly and without stint. If reproof and discipline must be administered let it be done firmly, tempered with friendliness. It is one of the highest achievements of a good executive, as far as relations to his staff are concerned, to have every member feel that he can expect a sympathetic hearing and a just judgment from his leader, the superintendent.

Contacts with the public. The responsibilities of a park executive would be comparatively easy if his contacts were concerned only with his governing authority and with the organization and direction of his staff. It is as a public character, more or less constantly in the limelight, that his real cares and responsibilities begin. As the head of an organization which touches the people of every degree so intimately and in such a variety of ways, he is called upon to exercise infinite patience, correct judgments and statesmanlike qualities. Individual citizens of every type, the press, the pulpit, political, business, civic, social, cultural organizations and societies, will take cognizance of what he is doing or not doing, and frequently make demands upon his time, patience and knowledge. Much of the time of his regular office hours will be consumed by the public; in fact, that is the chief purpose of having regular office hours. He will be the recipient of complaints and criticisms, commendations and flattery. He will be called upon to give talks or addresses before many different kinds of organizations and at many different occasions, both by groups who are genuinely interested in some particular phase of the work of the department or in the work of the department as a whole, and by groups who are interested chiefly in filling up a program. As the leader of a great social movement he will be expected to know more about the community and its leisure time needs than anyone in the community. His advice and assistance will be frequently sought. Moreover, in the very nature of modern park service, the superintendent is bound to initiate certain contacts with individual citizens and with organized groups of private and public institutions.

The conditions of his organization may require that he establish and maintain relations with the civil service, the purchasing, the legal, the police, the financial, the engineering departments of the city or county, as the case may be. In the conduct of negotiations for the purchase of properties, or in the making of contracts for improvements, or the purchase of supplies, tools, materials, equipment, he must establish relations with many individuals and corporations. He may need publicity in order to make some particular service effective, or to put through some particular project. He may call upon the press, the pulpit, the public schools and other avenues for disseminating information. If the governing authorities adopt a policy of using properties and facilities not under their own direct control in order to extend their services, he will need to establish contacts with individuals possessing properties adaptable for use, or with the public school system, or with private organizations and institutions possessing indoor and outdoor facilities which can be turned to public use. He may desire to promote certain types of recreational activities and may therefore call upon a golf association, a tennis association, an athletic association or dramatic society,

a music club or similar group, to assist. He may, with the approval of the governing authority, desire certain amendments to the laws. This is likely to involve a campaign of education in which he will of necessity take an active part and ultimately result in establishing contacts with leading legislators.

It is impossible to enumerate all the many kinds and occasions of contacts an active, able, broad-visioned superintendent will make with the public. Their nature and extent will vary as widely as conditions in different communities vary. In a great many instances these contacts will be actually carried out through subordinates under the general supervision of the superintendent. It may be wise in some instances to use the services of individuals entirely outside the departmental organization. After all, the mark of a genuine executive is his ability to utilize the services of other people.

In all this broad field of public contacts there are certain rules or principles that the executive should keep in mind. An executive, especially a new executive, should be exceedingly careful not to push himself forward too rapidly. He cannot escape public contacts, but when the opportunity does come, either by invitation or by necessity, it is desirable that his attitude be more reticent than forward, and that all his dealing with the public be marked by a frankness, sincerity, clearness of statement and soundness of judgment that will at once inspire confidence. Too many words do not make truth. They more often serve to cause confusion in thinking and to cover up truth. In all publicity resulting from public contacts or arising from the activities of the department, the executive should be very careful not to permit the entire credit to go to himself. In publicity resulting from public contacts or from interest in activities growing out of the efforts of the organization, credit should be given to the department or to members of the governing authority or of the staff, if they deserve the credit. Some otherwise good executives have raised a host of enemies and limited their own usefulness in their communities by appearing too frequently in the public eye.

Executive Organization in Small Communities and Large Communities

Much that has been said heretofore in this chapter applies only to executive organization in large park and recreation systems involving divisional or departmental organization with various types and grades of subordinate executives. However, with respect to the relations of the superintendent to the governing authority, to individual members of the staff and to the general public, the general principles that have been stated apply equally as well in a small system as in a large one.

In the small system the superintendent must of necessity play the double rôle of the chief executive and most of the parts played by the divisional chiefs or subordinate executives in large organizations. The functional activities in a small system are not greatly different in content from a large system. Records must be kept, planning and construction work must be done, plantations must be cared for, recreation activities must be provided for and supervised, general maintenance must be carried on, funds must be spent and accounted for and reports must be made. In the small systems the superintendent must take personal charge of all these activities and in many of the systems actually perform most of the duties. He is chief executive, clerk, director of play and recreation, gardener, maintenance foreman, all in one. However, even in small systems, it is desirable to introduce, wherever possible, the semblance of a divisional organization consisting at least of an office division, and if no other provision is made for community recreation, an organized recreation division and a maintenance division. Too many superintendents, even in fairly large systems, are expected or required to spend too much time in clerical work, the result often being that full and complete records are not kept. Every park governing authority in a small community that considers it worth while to employ a trained superintendent should provide the superintendent with an intelligent stenographer-clerk, even if it is only on part time. If the superintendent is not himself a trained recreation organizer, he should be provided with an assistant who is. It is highly desirable, however, that the park and recreation superintendent in small communities be trained in play and recreation organization and leadership. Horticultural training is likewise of fundamental importance in a unified system, not only because of the constant need of this knowledge in park work but also because of its possible use in the recreational program, a use that has been too much neglected even in the larger systems. Trained play leaders, the number depending upon the number of centers maintained, a few laborers for maintenance, with possibly a capable foreman where the number of laborers and the extent of the maintenance work warrants the employment of a foreman, would complete the staff.

It is often one of the unfortunate conditions in a small community that the salary which the community is willing or able to pay is not commensurate with the all round training, versatility and resourcefulness required in the chief executive or superintendent. Park governing authorities in small communities should not hesitate to invest a goodly percentage of their budget in a capable, well-trained executive. They should remember, too, that this expenditure does not represent executive overhead but stands for executive overhead plus the varied services rendered by the

superintendent which in the larger systems would be performed by subordinate executive officials. It will and should always be true that relatively a larger proportion of the budget in a small community should be invested in personnel (staff) than will be the case in a large community.

Scientific Management.

The eight rules on how to manage, by W. H. Leffingwell, as stated in the April *News Bulletin* of the Department of Commerce, have much to offer park superintendents in planning their work:

"(1) Define your purpose. You must know what is to be done before you can know how. This is your master task. (2) Analyze your problem. Your master task will then break up into many detail tasks. Consider them all — neglect none. (3) Seek the facts. Study every condition governing each task and the undesirable element to be eliminated and the desirable element to be retained. Then standardize right conditions. (4) Devise the one best method. Aim to conserve energy, time, space, material. Determine relation of details to master task. (5) Find the person best fitted. For each task certain personal qualities are essential. In each person certain qualities predominate. Find the person best fitted. (6) Teach the person best fitted the one best method. Not by driving, but by thorough, patient teaching are understanding and skill developed. (7) Plan carefully. Right planning of arrangement and sequence of work will enable you to accomplish tasks in logical order, accurately, quickly, economically. (8) Win coöperation. Coöperation means working together. It cannot be demanded; it must be won. Accept your share of the responsibility. Respect the rights and aspirations of others. This is scientific management, and through scientific management may we expect to eliminate waste."

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CHAPTER IX

OFFICE ORGANIZATION AND MANAGEMENT

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Scope. The information in this chapter does not attempt to cover completely the field of general office management or general bookkeeping and accounting practice. It rather supplements standard works on such subjects as office management, accounting, bookkeeping, statistics, office personnel, etc. An attempt will be made in this chapter to apply the general principles obtained in such standard works to the specialized field of park office management. The assumption therefore is that the reader already is familiar generally with detailed office planning and layouts, office equipment and appliances, the qualifications and personal requirements of office employees, ordinary methods of compensation, etc. Such subjects will be touched upon later in this chapter but only incidentally.

Point of view. In directing a work of this kind, selection of the proper point of view is essential. The great variation in the size of communities who are apt to refer to this chapter makes it very difficult to choose the angle from which to attack the problem. For example, according to the 1924 census, there were approximately fifteen thousand incorporated villages, towns and cities under ten thousand population; some five hundred cities from ten to twenty-five thousand population, and a materially lesser number above twenty-five thousand population. The need for park records necessarily varies materially between the smaller cities and the larger ones. Nevertheless the need is present in all classes of cities, and since practically the same records are fundamental in all cities, the larger being only more complicated and involved than the smaller, it is only natural that the point of view of this chapter shall be directed at a sort of evolution of the need of the smaller community to that of the more complex systems. In this way, even the small communities can see the future growth of their own departments and can design their needs in the light of future requirements.

Need for better office facilities. There is an apparent lack of appreciation by the majority of the park and recreation governing authorities throughout the whole of the United States of the importance of keeping accurate and thorough records with a consequent lack of proper provision for either clerical staff or office equipment. This is not confined to only the small communities but is found also in many of the larger cities. Records are of vital importance. It is just as important to keep complete and accurate

records in the handling of the affairs of a small department as it is in the large department. While it is true that in some cities records pertaining to park and recreation matters are kept by employees in charge of other municipal departments, nevertheless the records should be complete and correct in all details.

Organization above Office Manager.

1. *Authority responsible for keeping records.* The majority of the ordinances, charter provisions and state laws that form the basic legal authority for the establishment of park and recreation systems in both municipalities and counties require of the general governing authority of such systems that certain reports, chiefly fiscal, be made annually (sometimes more often) to some other superior authority such as the mayor, city council, county board of commissioners or supervisors or county court, or, as in the case of certain independent park districts, to the state. Thus the definite responsibility for keeping records is laid upon the authority immediately in charge of the park and recreation system, whether that authority is a city manager, a commissioner of public welfare, or a commissioner of public works, a commissioner of parks and public properties, or a park and recreation board or commission. This duty of keeping records and making reports is generally delegated to an employee under the governing authority. In most of the small systems the superintendent is responsible, sometimes with and sometimes without the aid of an employee variously called stenographer, stenographer-clerk, clerk, or secretary, and in a few of the large systems this same plan prevails. In a considerable number of the laws establishing park and recreation systems the general governing authority is specifically empowered to employ a secretary. This secretary may or may not be a member of the board or commission under this form of general administrative control.

2. *Questions of policy.* The requirement in some laws setting up the park and recreation board or commission plan of general administrative control, whereby a member of the board is directed to act as secretary, is deemed unwise in principle for the reason that a non-salaried board member is not likely to have the time necessary to keep the records thoroughly and always up-to-date, and possibly he would not be qualified even if he had the time. Moreover, a board member should not be required to engage in such executive details as record keeping.

Some legislation setting up the park and recreation board or commission type of general administrative control specifically authorizes the board to appoint a secretary who shall not be a member of the board but who shall be wholly responsible to the board and independent of the chief execu-

tive officer. In the stage of park development in this country when the chief executive officer was primarily a horticulturist and perhaps presumed not to be well trained in business and social service organization and management, there may have been some vital reason for making the secretary wholly independent of the chief executive. But with the type of chief executive or superintendent which a modern park department demands, this plan of divorcing the office division from the control of the chief executive is contrary to the principles of efficient business organization and management. Not infrequently points of friction have arisen between the secretary and the chief executive under the divided plan. The secretary, because of his intimate knowledge of the records of the department and his close personal contact with the members of the board, can easily create situations very irksome to the chief executive. The secretary, if long continued in office, will likely tend gradually to assume a kind of proprietary right in managing certain phases of or even all the affairs of the department — a right which properly belongs to the chief executive. The chief executive or superintendent should be chief executive in fact over all divisions of the department. This should be adopted as a vital principle of efficient business organization in all park and recreation departments.

In modern movements toward concentration of power in municipal governments represented by the city manager, commission and Federal plans of municipal government, there has been, curiously enough, a decentralization of responsibility that organically belongs in different departments of the city government. Thus the purchasing department makes purchases for all city departments; the city attorney acts as adviser for all departments; the treasurer keeps all finance records; the city engineer performs the duties of an engineer for all departments, and the city clerk keeps the records for different departments, etc. With reference to park and recreation departments under such systems of city government, record keeping, instead of being an organic function of the chief executive officer with a clerical force under and directly responsible to him, has been split up among several different departments of the city government. This plan is perhaps commendable from the standpoint of economy, but it is likely to result in the department not having collected and organized in a thorough and comprehensive manner those records that it should have in its own possession and with which it should be very familiar.

In very small departments where the budget is only a few hundred or a few thousand dollars and the scope of activities limited, this plan is perhaps the only practical method of handling record keeping as well as performing general and specific executive functions. But as soon as any park and recreation department begins to utilize an operation budget of, say,

from eight to ten thousand dollars and upwards, and to function as a community recreation agency, it should have a definite office headquarters with a clerk or secretary in charge whose primary duties shall be the accurate and comprehensive keeping of all the basic records of the department. This clerk or secretary should be directly responsible to the superintendent who is in the last analysis responsible for all record keeping as well as all other functional activities of the department. In fact, it would be advisable in most cases for the park and recreation commission to elect the superintendent secretary of the department. This would clearly place the responsibility of organizing and managing the office division upon the superintendent just as he is responsible for the organization and management of other divisions of the department. When the budget is as small as the minimum set here, and even considerably larger, the entire time of the secretary might not be needed for keeping the records. In this case he or she might be required to perform some other duties in the department, such as acting part time as play leader on a playground, or in charge of some sport, or as swimming instructor, etc. This plan might be followed until the affairs of the department grew large enough to employ the full time of the secretary. As the scope of the activities of the department increase, other office workers would be added from time to time until the stage of development of the office is reached as found in the office organizations of the larger park and recreation systems of this country.

This plan of office organization development is recommended to all park and recreation departments of the country, irrespective of the form of city government under which they operate.

3. Qualifications of the secretary of a park and recreation department. The training and personal abilities required of a secretary of a park and recreation department will, of course, vary with the nature and extent of the duties to be performed. In the smaller systems his duties will be chiefly of a routine nature, requiring technical knowledge within certain fields. In the larger systems his duties will be largely supervisory and to some extent executive, requiring a technical knowledge of the several phases of the entire field of business organization and management. In very small systems where only one secretary may be needed, the training should include a knowledge of stenography and typewriting, bookkeeping, taking and keeping of minutes, filing, how to properly take and answer telephone calls, etc. If the office duties do not require the full time of the secretary, it is advisable for the secretary to be qualified to perform some other duty in the operation of the department. Educationally the secretary in such a department should be at least a graduate of high school in the business course or its equivalent in some business college.

When the system grows large enough to warrant the employment of a full time stenographer this phase of business training might be dropped from the training required of the secretary. But a thorough knowledge of business transactions, and of keeping finance records, as well as other records of the department, should be required. When the business of the department demands the employment of a number of office employees such as assistant secretary, bookkeeper, clerks, tabulating machine operator, stenographers and telephone operators, the duties of the secretary become almost wholly supervisory and executive. The secretary should in such a situation be broadly and intimately trained in the entire field of business organization and management and in the handling of employees.

4. *Personal qualities.* Being in charge of the office the secretary will naturally come much into contact with the public. This is especially true of the small and medium-sized cities and the smaller county park and recreation system. This may also be true of the larger systems, but the more highly organized and specialized office force of such systems makes it unnecessary for the secretary to meet everyone coming to the office for information or other services.

Personal qualities desirable in a secretary who comes frequently into contact with the public are a spirit of friendliness, helpfulness, courtesy and tact. He should be businesslike without being abrupt, mentally alert, with a manner of attending to the desires of the caller which shows a thorough knowledge of the affairs of the department. The good will and prestige of the department depends not alone upon the services rendered through different facilities in various sections of the community but also upon the favorable impressions which citizens get when their desires bring them to the office. The secretary has it within his power to create a favorable or very unfavorable impression at this point. In the larger systems where the secretary serves largely in a supervisory and directory position, the personal qualities should be such as to win the confidence and esteem and good will of the employees under him and of the employees of other departments with which his duties bring him into contact. (See pages 558–616 for sample duties of secretary.)

Organization in Control of Office Manager — Its Management.

1. *Evolution of the office force.* For a clear understanding of the organization of a park office it is best to describe in detail that which has already been intimated — the evolution of such an office. There are those departments so small that the park executive must be horticulturist, engineer, recreation director and office force combined. So ramified and so numerous are his duties that he begins letting the "lesser important" things slide.

Office work is one of the first of his duties which he leaves for a "rainy day." The "rainy day" does not come as often as he anticipated it would, with a result that office records in many cases are poorly kept or not kept at all. The park executive himself sooner or later realizes this fact and feels he must have an office assistant. In the smallest departments this is often someone who is expected to answer office calls, both personal and telephone, probably type a letter or two and otherwise "just be there" if something happens. As the department business increases, personality becomes a more important factor, calls are more frequent, letters more numerous and "books" become necessary. A combination bookkeeper and stenographer is the person best suited for the job until the business is great enough to justify and demand the services of both a stenographer and a bookkeeper.

The first division of labor has now occurred in the office organization. The development of the office is now just a continual repetition of this same process, and the only criterion of the stage at which this division should take place is determined by the amount of work to be done as revealed by experience and careful investigation of each individual case. Where we had one stenographer, we now have several of somewhat different capacities — the typist, the true stenographer, the secretarial assistant, the expert shorthand reporter as well as the dictaphone and mimeographer experts and the like. Our one bookkeeper has become chief bookkeeper, auditing clerk, timekeeper, cost accountant, statistician, bookkeeper on this set of books, bookkeeper on that set of books, etc. And we also have telephone operators, information clerks, file clerks and miscellaneous clerks of all kinds. Not only has the personnel become larger and more varied but we at last reach a point where it is more economical to supplant manual methods with machine methods. Adding machines make their appearance early, but later on the manager is confronted with the economical necessity of adopting one of many possible bookkeeping and statistical systems. This introduces the various appliance operators. Filing becomes complicated and special labor-saving filing equipment makes its appearance. Stock records become necessary, and we have a stock room and stock shelving and similar equipment.

The stranger entering this office does not recognize any similarity between it and the little stenographer and bookkeeper office pictured above. It is absolutely necessary, however, that the manager of the complex office *does* recognize the resemblance between the two; that his mind be broad enough to see in his ramified departments the work as of one man aiming at one goal. One of the first duties of a new manager is to chart his organization to see that the greatest division of labor is possible, that the proper promotion possibilities are available to all employees, that the work itself

is efficiently assigned, that proper sub-management exists and that similar questions of office management are properly handled. It is fatal for a manager to get lost in the details of his organization, losing sight of the one-purpose aim and one-man personality of the department as a whole. In fact, the manager is the department and the employees are his personal functionaries. He has assigned no routine duties to himself except to coördinate the functions of his subordinates as the brain coördinates actions of arms, legs, fingers and body.

It is likewise important for the one-man department to imagine himself broken up into functions as our office manager has been dissected, not only that he may see how well rounded his own capabilities are, but that he may acquire and maintain the point of view he must maintain if he is to head any kind of an organization. Keeping this thought in mind, the reader from large and small communities alike will find interest in the further discussion of office management.

2. *Duties of employees.* Every employee is entitled to a written statement of what his duties are. The office manager is entitled to his. He may have to obtain these duties from the park laws and ordinances or he may be fortunate enough to have them given to him, but however he gets them they will be very brief and very general and it will be necessary for him in writing out duties for employees under him to analyze them carefully, reduce the general terms to specific terms and consequently more voluminous matter. These again will be carefully studied and assignments determined according to functions to be performed. The manager is merely breaking up his own duties and reassigning them to his subordinates.

The following is cited as an example of how the duties of the secretary are reduced from general terms to specific terms and transferred to his employees. A certain city charter has this to say concerning the secretary of the board of park commissioners:

"Appoint annually a secretary who shall not be a member of said board. The person elected as secretary before entering upon the duties of this office, shall file with the comptroller of said city a bond in the penal sum of ten thousand ($10,000) dollars, with at least three (3) good and sufficient sureties acceptable to said board of park commissioners. Said secretary shall have power and is hereby authorized to administer oaths in all proceedings under this chapter and incident thereto.

It shall be the duty of the said secretary to submit to the said board, at the first meeting in January, a report showing the transactions of his office and other information necessary for the conduct of his business."

This charter also gives the board of park commissioners power to make rules governing its own proceedings, and in its rules the board has enlarged upon the duties of the secretary as follows:

"The secretary shall perform the duties required by law, and all duties properly devolving upon such officer. He shall have charge of and attend the office of the board when the board shall not be in session, as the board may from time to time direct. He shall attend all meetings of the board and of its committees when required. He shall keep a true and complete record of the proceedings of said board, and of committees, and

have charge of all books, documents and papers which properly belong to his office. He shall draw all check-warrants, payable out of the City Park fund, for all bills ordered paid by the board; which check-warrants shall be signed by the President, Secretary, City Comptroller and City Treasurer. He shall keep, in proper form, books of accounts, showing the moneys received by and paid out of the City Park fund. He shall cause all paid vouchers to be filed and properly preserved and have custody of the corporate seal, attaching the same to all documents which require sealing. He shall furnish any information obtainable from the books of the board, at the request of any commissioner. He shall have the custody of a fund for the payment of emergency items, as may be fixed by the board, to be called the Contingent Revolving Fund. He shall deposit the Contingent Revolving Fund and all other funds in such bank or banks as the board may designate in the name of the Board of Park Commissioners. He shall draw all checks on such account in the name of the parties to whom the money is due and sign such checks as secretary.

On the first and fifteenth of each month, or as soon thereafter as practicable, he shall make out or cause to be made out, semi-monthly statements showing all payments from the City Park fund and also from the contingent fund, certify to their correctness and submit the same, together with all vouchers or other data from which they are prepared, to the standing committee on finance for audit. He shall supervise or cause to be supervised the payment of employees upon the work, and shall take and file in his office receipts for amounts paid them. He shall supply new members on their election to the board with a copy of these rules and ordinances."

The duties so enumerated are still in very general terms, consequently, after assigning to himself such duties as attendance at all board meetings and committee meetings, the preparation of all committee reports, the keeping of the records of committee and board meetings, including the proof reading of all printed minutes, the preparation of resolutions of varying character presented to the board, the publishing of all legal notices, the signing of contracts and check warrants and related duties, the secretary has assigned the following duties to be cared for by employees of his department which, for the most part, include restatement of the general terms included in the city charter and the rules of the board:

(*a*) *Financial records.* Keep record of all receipts and expenditures of the board, including whatever detailed cost and sales records are necessary or desirable to aid in the management of the various departments.

(*b*) *Special assessments.* To make all special assessment rolls and do whatever clerical work is required by the commissioners appointed to make such assessments and appraisals.

(*c*) *Land records.* Keep record of all land transfers, properly index and preserve all title documents, and supervise the preparation of record plats.

(*d*) *Cash audits.* Make periodical audits of the cash at all sales stations and design methods of check and report systems in order to see that all revenues taken in arrive safely in the city treasurer's hands.

(*e*) *Legal service.* As an aid to the attorney, draw and check all land descriptions, draw up ordinary contracts, resolutions and other legal documents so that only his O.K. will be required.

(*f*) *General.* Perform general office work of whatever nature required for all other departments. In this connection, keep in close touch with the bond and commodity market so as to be able to advise on these matters.

Please answer all of the following inquiries and return the blank as soon as possible to .....

1. *Name* .....
2. *Title or Position* .....
3. *What is your principal duty? (Describe fully, using extra sheet if necessary.)* .....
4. *What forms do you handle in above work and from whom do you receive them and to whom do you pass them?* .....
5. *How much of your time is occupied in the above work?* .....
6. *What suggestions have you for shortening the time or increasing the value of your work? (State fully, using extra sheet if necessary.)* .....
7. *Who consults your records of above work and how often?* .....
8. *Describe separately but briefly every other task you do, giving form numbers of records you keep or blanks handled. Designate as daily, weekly or monthly* .....
9. *Who consults these records and how often?* .....
10. *To whom are you directly responsible?* .....

Fig. 1. From "Accountants' Handbook" by E. A. Saliers, published by Ronald.

In this case, as is true in most cases, it is impossible for the sake of economy in organization for the office manager to assign one or more persons exclusively to financial records and another group to special assessments. It has been necessary for him to describe in detail the general processes of the office and the records to be kept in each of the above classifications and then assign various employees to handle the records and be responsible for certain of the processes so described.

To illustrate: One of the positions exclusively assigned to financial records is that of principal bookkeeper, whose duties have been enumerated as follows: "Under direction of the chief clerk, to either post or have posted the general journal and general ledger and subsidiary ledger, all of which contain the controlling figures of all receipts and expenditures of the board; under the direction of the assistant superintendent, to have charge of the compiling of the budget of the board of park commissioners and the plan of expenditure for the year; to supervise directly the work of the senior bookkeeper and the junior bookkeeper; in general, under the direction of the chief clerk, to have charge of all bookkeeping processes of the department and to be responsible for the issuance of regular monthly statements which are to be out not later than the tenth of each month; and to perform related work as required." These duties have been described in minute detail under the "approved methods" of that position in the same manual.

Should the manager be stepping into an old organization, it probably will be necessary for him to conduct a simple survey to determine how well delegated his own duties are. Having each employee turn in a questionnaire similar to Figure 1 will probably suffice. A comparison of these, with the duties of the manager, reveals loopholes that the manager must fill. He does so by a reassignment of duties as outlined above. Where his ideas differ greatly from his predecessor, an office reorganization results. Except where the former organization was generally conceded to be grossly inefficient, a new manager will do well to make changes very gradually.

3. Organization charts. When the manager has successfully analyzed his own duties and delegated them to real or imaginary employees, he is ready to construct an office organization chart. It is his "architect's plan" of the "organization structure." It is a system of oblong enclosures on paper, in each of which is written the name of the positions the manager's duty analysis has created and the positions connected with lines representing the lines of authority in the organization. Figure 2 is an example. Such a chart, once devised, clears up many misunderstandings as to duties, authority and responsibility. It should be familiar to all employees. A study of the chart brings up for solution such problems as the determination of individual qualifications, grades of employees and compensation.

4. Individual qualifications. After the chart of organization has been prepared, and in fact even while it is being prepared, the qualifications of the individual assigned to each one of the positions are given careful consideration. Obviously there will be general qualifications (largely qualifications of character) which vary somewhat in each individual position. These will be such attributes as honesty, truthfulness, neatness, tactfulness and alertness. There is another group of qualifications which pertain to ability as revealed by training and experience. Some positions require no particular training except grammar school training, while others require a highly specialized technical education, and in between innumerable variations of the one subject of training. Oftentimes experience is able partially at least to offset deficient training, and in still other cases it is necessary to insist upon a certain amount of experience in addition to rigid training qualifications. All these qualifications should be determined for each individual position, and in that way all of the characteristic qualities of each individual are available for ready reference at the time of filling the position and for analyzing the weak and strong points of people already in the organization and requisitioning employees from the civil service in case such a department is in existence.

As an illustration of this we quote again from the office manual concerning the qualifications of the principal bookkeeper: "Education equivalent to graduation from high school; at least four years successful experience in accounting, bookkeeping and auditing work, two years of which should have been in connection with the bookkeeping work in the office of the board of park commissioners; thorough familiarity with the accounting, classification and forms used by the department; knowledge of the theory and practice of accounting; good penmanship; ability to operate a typewriter desirable; supervisory ability, extreme accuracy, carefulness, thoroughness, good judgment, good health, and such additional qualifications as may be prescribed from time to time."

5. Compensation and grades. With the aid of the organization chart and the individual duties and qualifications determined, it is possible to divide the various employees in the office into various grades, as, for example, into junior, senior and principal grades. The reason for doing this is largely one of giving like compensation to those doing like work and of maintaining a spirit of contented coöperation throughout the entire office. It is perhaps even more important to be impartial and fair to all employees in a city departmental office than in a private institution. There should be no opportunity whatsoever for justified criticisms of ill treatment or insufficient or unequal compensation.

In many municipal offices the entire matter of compensation is con-

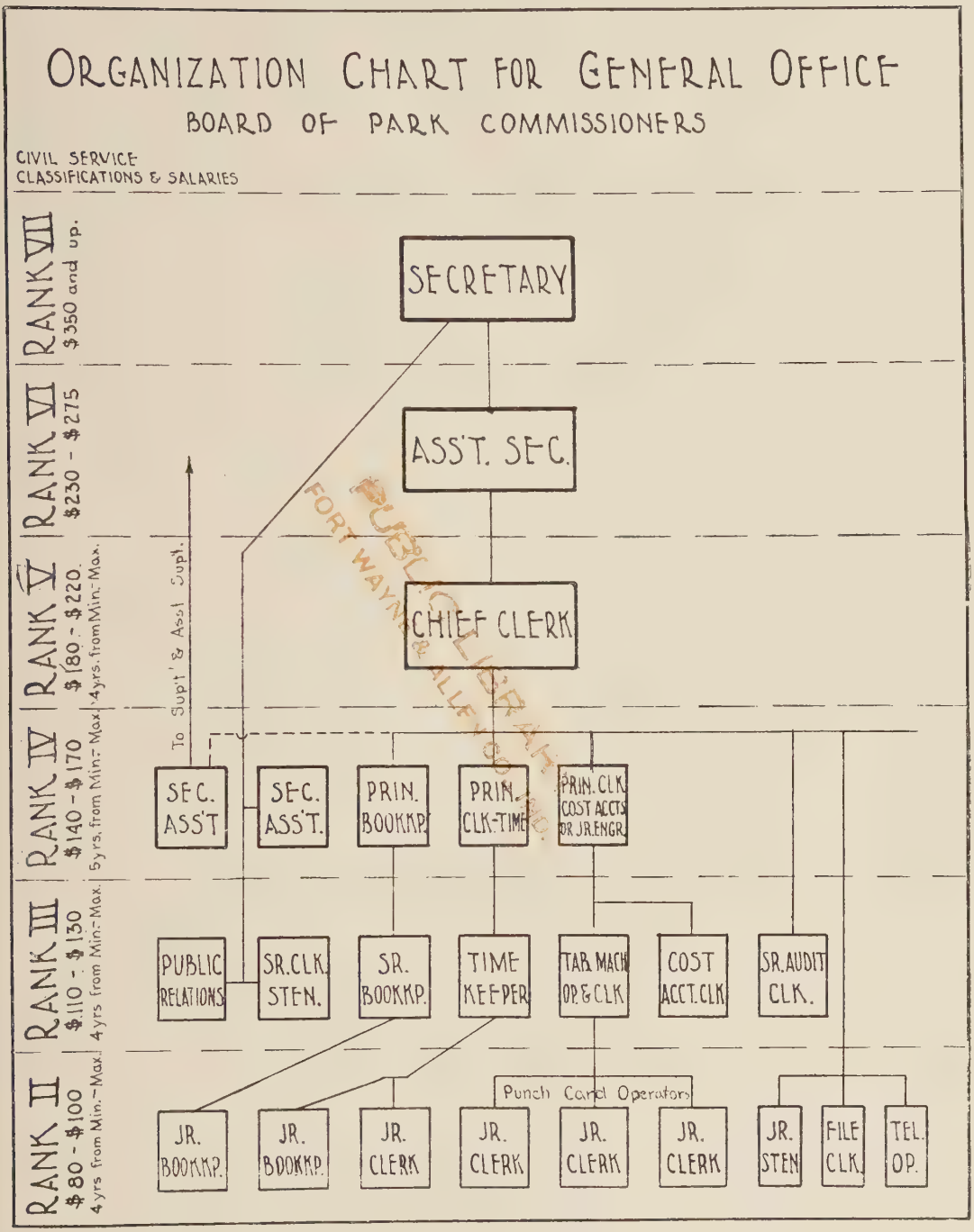

ORGANIZATION CHART FOR GENERAL OFFICE
BOARD OF PARK COMMISSIONERS
CIVIL SERVICE
CLASSIFICATIONS & SALARIES
RANK VII
$350 and up.
RANK VI
$230 - $275
RANK V
$180 - $220.
4 yrs. from Min.-Max.
RANK IV
$140 - $170
5 yrs. from Min.-Max.
RANK III
$110 - $130
4 yrs from Min.-Max.
RANK II
$80 - $100
4 yrs from Min.-Max.
SECRETARY
ASS'T. SEC.
CHIEF CLERK
To Supt' & Asst Supt.
SEC. ASS'T
SEC. ASS'T.
PRIN. BOOKKP.
PRIN. CLK-TIME
PRIN. CLK. COST ACCTS OR JR. ENGR.
PUBLIC RELATIONS
SR. CLK. STEN.
SR. BOOKKP.
TIME KEEPER
TAB. MACH OP. & CLK
COST ACCT. CLK
SR. AUDIT CLK.
Punch Card Operators
JR. BOOKKP.
JR. BOOKKP.
JR. CLERK
JR. CLERK
JR. CLERK
JR. CLERK
JR. STEN
FILE CLK.
TEL. OP.

Figure 2 -12A-

sidered at the budget-making time annually and so-called "adjustments" of salary are made annually. Although in some places this may work out reasonably well, unless the idea of uniform pay for uniform grades is kept in mind by the financial authorities this process can be made very unequal in its application.

A better method is to determine impartially a maximum and a minimum compensation for each grade, giving the head of the department discretion in setting the rates of pay between these limits, or still better, to allow for an automatic increase from year to year between these limits for those employees who continue efficient, it being assumed that all others will be eliminated from the payroll entirely. Such a plan answers the usual requirements of the city department. Those to whom the head of the department reports can, by limiting the number of employees in the various grades to a definite number and by appropriating a fixed amount in the annual budget for personal service in the office, restrict the office manager entirely to expenditure of funds and yet at the same time give him enough leeway to organize his office in the most efficient way possible and place the responsibility for its operation directly upon his own shoulders. It might be added that promotion from one grade to another can be obtained only through a vacancy occurring in the next higher grade and that the employee, going from, say a junior grade to a senior grade, must qualify to the next higher grade either by examination or by methods satisfactory to the department head.

It will be noted by referring to Figure 2 that the organization chart provides for certain grades and compensation of employees a certain number of years to go from the minimum compensation of that grade to the maximum compensation of that grade. The following is quoted from the minutes of the board establishing such a plan of compensation:

January 7, 1925.

To the Honorable Board of Park Commissioners.

Gentlemen: Your Standing Committee on Finance respectfully reports and recommends that the following policy concerning the salary of employees in the administrative office of the board be hereafter followed, effective January 1, 1925:

1. That the employees in the administrative offices of the engineering department, recreation department and general office be classified as provided for by civil service rules.

2. That a maximum and minimum salary for each rank be fixed as indicated below.

3. That the number of persons employed in each rank be limited to the number indicated below.

4. That all new employees entering the service commence at the minimum salary for that grade and their salary be automatically advanced on each anniversary of their entrance by one-fourth or one-fifth the difference between minimum and maximum salaries, depending on the number of years it takes to go from the minimum to maximum as indicated below. Persons being transferred from other departments and present employees are to be given credit for the number of years already employed in their grade. Advance from one grade to the next can only be effected by proper vacancies occurring in the higher rank and by the usual civil service examinations.

Number of Employees	*Grade*	*Monthly Salary Minimum*	*Monthly Salary Maximum*	*Years to Reach Maximum*
General Office:				
10	Juniors	$80.00	$100.00	4
6	Seniors	110.00	130.00	4
5	Principals	140.00	170.00	5
1	Chief	180.00	220.00	4
Engineering Department:				
3	Rank I. Utility	4.00	5.00	Daily Rate
9	Rank II	130.00	170.00	5
1	Rank III	180.00	225.00	5
Recreation Department:				
(Recreation Service)				
1	Instructor Community Center	75.00	100.00	5
1	Assistant Recreation Director	105.00	130.00	5
1	Assistant Director Recreation Center	115.00	140.00	5
5	Assistant Director of Recreation	160.00	200.00	5
(Clerical Service)				
2	Juniors	80.00	100.00	4
1	Senior	110.00	130.00	4

Note. The positions included in the various grades in the engineering and clerical service are as established by the civil service commission. This recommendation contemplates no reduction of the present salary of present employees.

Respectfully submitted.

....

Committee.

Adopted.

6. Discipline and office character. There is nothing quite so conducive to an efficient office as an equitable compensation system. After all is said and done, an employee is working to earn enough money to buy those things which tend to make him happy and contented. Since the employee's ambitions and ideas of happiness are continually enlarging, it is not surprising that promotions are continually in sight and that no blind-alley jobs are in the office. Every job should lead to the top if it is at all possible, the restrictions for advancement being entirely in the hands of the employee and his own limitations.

There are, however, other contributing factors to an efficient office, all revolving about the central idea of contented workers. There should be sufficient labor-saving devices to make the work pleasant. Light, air, and, if possible, sunshine and, generally speaking, a comfortable office should be available. Truthfulness and frank informality should at all times be cultivated. An office that has one set of standards when the "boss" is around and a different one when he is not around cannot possibly be relied upon to give whole-hearted coöperation to the program of the office itself. In such cases there is something wrong with either the boss or with the employees, with the chances in favor of the boss being wrong. An employee has a right to expect the confidence of the office manager in all things pertaining to his particular job.

The employees of one park office have received the following admonitions and suggestions from their manager. It is worth careful study.

"Rather than give a list of rules of conduct — which I think brands an office as being composed of mediocre individuals — I prefer to give you my conception of the proper attitude to assume and let the individual be himself. I am an idealist and expect every one in the office to believe that the best man wins and that honest, conscientious, charitable effort invariably supplants and predominates effort of the opposite character. I consider this the fundamental attitude, for it is what makes one genuinely cheerful and happy even in times of adversity, for then it is conducive to self-examination and prevents personal depression. Moreover, it is a fact. Moments of success, you have the personal satisfaction of knowing, are the result of faithful and thoughtful service and, on the other hand, defeat discloses your own shortcomings and frailties which tends toward sympathetic consideration of others and a reduction of personal egotism.

In accordance with the above, I shall expect all of us to treat each other, not as superiors and subordinates, but as free and equal American citizens. To be sure, we are of different capacities for the work of the office, but that does not mean that we are of the same relative total mental capacity. A subordinate in the office may be a superior outside the office. We are working *together* and *with* each other and every respect and courtesy should exist among all employees.

I never expect to *order* anyone to do anything — I shall *request* that it be done. At the same time, I expect the request to be complied with wholeheartedly, not because it comes from a superior but because you are interested in the welfare of the department, believe in parks and are anxious to do your bit to the best of your ability. In other words, you are truly coöperating.

The office hours are from 8.15 a.m. to 12 m. and from 1.00 p.m. to 5.00 p.m. on each day of the week except Saturday when the hours are from 8.15 a.m. to 12.00 m. No work on Sunday. We have no time clock and never expect to purchase one. In spite of office hours, remember you have a job to perform upon which your efficiency is judged. You are the first one who knows that additional time should be spent on your work and it should not be necessary to tell you so. On the other hand, any reasonable requests for additional time off at noon or otherwise are always granted. Vacation of two weeks and a two-week sick leave are given as provided for by civil service rules. The time of vacation is determined in as fair a manner as possible to suit both the employee and the department.

It does not seem necessary to go further into the deportment of the employees at the present time. Remember only that you are expected to give good, honest, conscientious, constructive service and are to be treated and respected in a dignified and sympathetic manner."

Whole volumes have been written on this one subject of office discipline, some containing very good ideas. The park office will do well not to go in much for social welfare work or fads and fancies of any kind. These are frequently resented by the class of employee one would like best to have in a park office. Nevertheless, many of the newer ideas can be modified by old-fashioned common sense and often will work out to good advantage.

7. *The office manual.* The office manual has for its purpose the recording of the various processes of the office, the duties of the individual and such other information as will provide the employee with complete knowledge of the conditions under which he is endeavoring to carry on his work. It should contain a complete description of the duties and qualifications of the employee in each of the positions of the office, and where possible the approved methods of doing each particular job should also be outlined. It should also tell in detail the conditions under which each of the employees is working, lines of promotion, rates of pay, office hours and rules of conduct and similar general information. There should also be discussed within its pages the general process of work to be done so that the individual can tie his bit of work up with the rest of the office machinery. An office manual

describes all the things heretofore discussed under the general heading of management; it affords not only a guide post to the employee but it also presents to the employer any loopholes in his process which may exist, and frequently reveals the cause of lack of coöperation between employees and acts as a measuring stick when making decisions affecting processes of work and compensation of employees. It is the standard by which all work is judged and all employees are judged. Its advantage lies in that it does not change from day to day as the mental attitude of the office manager may change. Once fixed it is there unless revised by proper authority and is subject to consultation by all interested.

Every office should have an office manual and it would be a fine experience if every office manager would write his own. A possible outline of an office manual is included here for illustration purposes: *Introduction.* Giving the purposes of the manual, and including the general conditions under which the employees of the office are working. *Part One:* Work to be done. Being a general description and classification of the work carried on in the office regardless of who handles the various parts of the work. *Part Two:* Organization and duties. Being a description of the various classifications of employees in accordance with civil service rules and a detailed description of each office position, including the name of the position, the qualifications of the one filling the position, the approved methods of carrying on the work of that position described in minutest detail, the lines of promotion from this position to the next higher position and the salary connected with the position.

8. Progress of office work. The general object of any office organization is to accomplish a certain amount of work or a certain kind of work in a certain length of time. An office manager is weak if he does not know at all times the status not only of the routine work of the organization, but of special jobs as well. It is not safe for him to rely upon his memory or mere observation to determine these facts. It is much safer for him to have his office processes charted so that a daily progress report may be simply obtained and that the progress reports on all special jobs are available at all times. Weaknesses in the organization are easily detected, and in fact slow tendencies are easily observed so that immediate action can be taken before office calamities occur.

Figure 3 illustrates such a chart, and the following comment is made on that portion of it pertaining to the work of the time clerk and the assistant. It will be noted that the routine functions necessary in keeping track of the time of each of the employees of the department are analyzed and noted on the chart. In this particular case the time is mailed in daily by various foremen and employees on the job and the first item on the chart

notes when the time is in from all foremen. Under the column, say, for the fifth of the month, time will probably all be in for the third, which will be noted in that column. If the work is up to date by the end of that day (the fifth), the time for the second or possibly the third will be posted. The chart allows for notations to be made on all of these functions and any slow tendencies can easily be corrected so long as the chart is posted after each work day. In a like manner, each position in the office can be analyzed into its various functions and similar charts made for each position, all of the memoranda being made thereon at the close of the day's work so that the office manager can view the composite chart the first thing in the morning and learn the status of all the routine office work as of the night before.

These charts refer to routine work only. Special jobs coming into the office can be likewise charted on various forms of progress charts. Many of these charts are designed primarily for factory work but are frequently applicable to office work as well. Although of various types and design, all of them rely upon analyzing the job at hand into its elemental functions or steps and the progress of each step noted each day. When one realizes this fact one is in a position to design simple charts for the particular work at hand. It is important, for the new office manager particularly, to keep

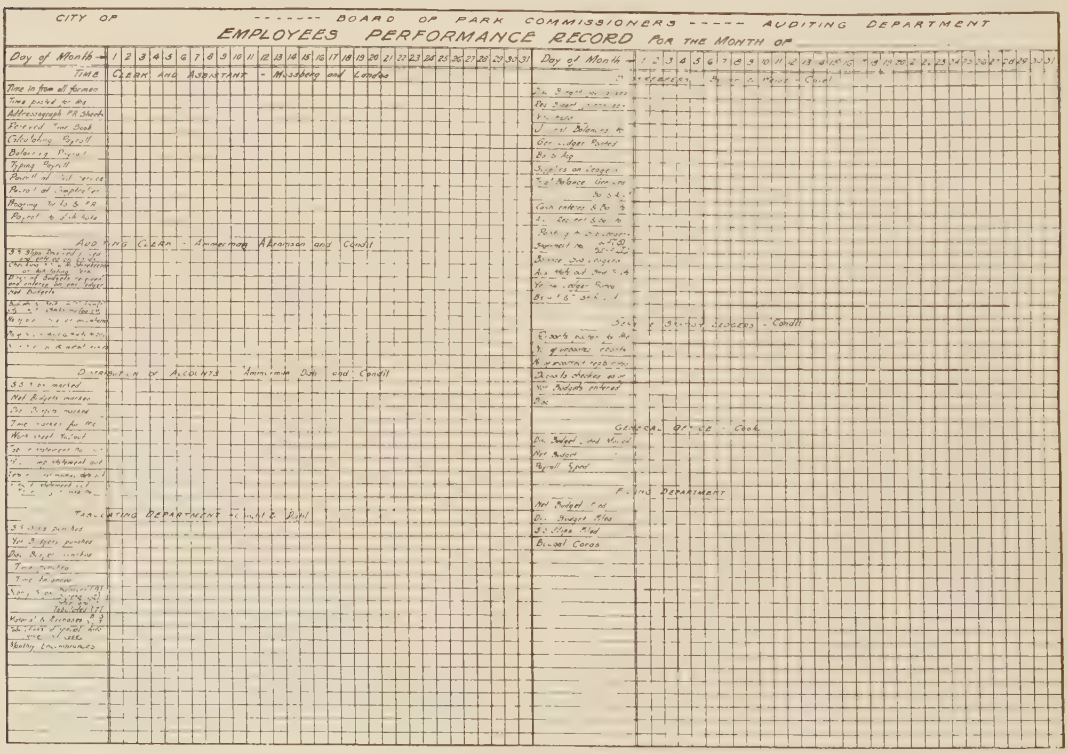


Figure 3

such charts religiously in order that he need not rely upon his knowledge of the office to ascertain those parts of the routine which are getting behind. The new man is not so familiar with the office routine that he can afford to rely wholly upon his intuition. After experience is gained, he may be able to dispense with the use of the charts, but too often he is apt to neglect them entirely until one or two bad experiences force him to rely upon them again. After all, the amount of energy necessary to keep these charts up-to-date is small and the value of the record both for managing purposes and as a record for future reference is worth much more than the effort necessary in keeping them.

Keeping the Records.

In this part of the chapter are discussed the various records to be kept in the park department and suggestions as to the method of their recording. Records have been divided into five general classes: (1) Laws establishing and governing the park department; (2) Official proceedings of the deliberations of the governing body; (3) An inventory of park possessions including a brief discussion on insurance; (4) Financial records; (5) Performance records and business statistics. Park departments will find other records than those described convenient in the operation of their park system, those outlined here being only of the most essential character.

Legislative acts establishing park department. The secretary should make a compilation of all state laws and statutes as well as provisions of the city charter and any general county laws bearing upon the establishment of the park department and defining its duties and powers. This may all be found, in fortunate cases, in one legislative act or city charter provision, but in other cases, especially those of the older commissions, acts relating to the legal establishment of the commission may be found in various places. All these should be gathered together and made available for ready reference at all times.

Supplementing such compilation of laws, statutes and ordinances, all important court decisions and attorney's opinions on various detailed subjects involving the interpretation of the law should be gathered together as a most necessary addendum to the original laws. When it is realized that these documents constitute the rules of the game for the park department, the importance of their collection is readily seen and it is obviously the duty of the secretary to be thoroughly familiar with them and to see that all actions, official or otherwise, are taken in accordance with them. In many cases, he may be fortunate enough to have the legal advice and assistance of an attorney, but even when such is the case, he should be just as familiar with these documents as his limited legal knowledge will permit him to be.

Besides being a guide to the official acts of his board or commission, the secretary's knowledge of the foregoing laws, court decisions and similar matters enables him to prepare the minutes of all meetings of the official body in the light of the legal requirements of various acts. For instance, in the laws establishing some commissions, it is necessary that at least two-thirds of the board members act favorably upon such important questions as the acquisition of lands, the creating of bonded indebtedness or the filling of a vacancy within their own ranks and various other questions. In such cases the secretary must be careful to note that the required number of votes are cast and so recorded in the official minutes of the proceedings that the legality of the action can be readily sustained.

Again, the laws of certain commissions may require that various actions shall be taken either by the passage of an ordinance or by the passage of proper resolutions. The secretary should be prepared at all times to see that such ordinances and resolutions are ready at the appointed time and that the passage is taken by the proper number of votes and properly recorded. While it is true that these questions border on the legal phase of park questions, yet, in most cases, the attorney is not presumed to be able, offhand, to know all the various provisions of the law relating to this particular department because the attorney quite frequently is a part-time man. He is usually available, it is true, for consultation and legal advice and can ascertain these facts upon research, but the secretary should be prepared with the working knowledge of the provisions of the law so as to guide the deliberations of the governing body in ordinary routine affairs.

Official proceedings. It should go without saying that the careful recording of all official actions of the governing body, be that body an elected or appointed board or commission or an individual manager, is of prime importance. Minutes of official meetings or compilations of official records are the authority for acts of the department; they are the recorded history of the department, the guide posts of future park policies ensuring careful deliberation on all issues and a continuity of purpose in all acts; they record park character even as our daily acts and deliberation form and record our individual characters. Without such records a park department has no traditions, no soul, no fixed purpose or policy, no beneficial public service and usually no park "system." The importance of these records emphasizes the need of them and the care which should be taken in their make-up.

1. Of metropolitan boards and commissions. The minutes of all meetings of the official body should be kept in accordance with Robert's Rules of Order or such other guide or special rules as are given. How much detail should be recorded is a question that the secretary must decide. While the reporting of much of the discussion and debate gives considerable

information to the hidden meaning and intent of the official acts, yet its mere recording is bound to inject a personal opinion into the official records which cannot possibly be unbiased unless, perchance, every word of the debate is taken down in shorthand and thus recorded. The necessity of this procedure is in most cases questionable, although there may be certain local conditions which make such procedure imperative. Ordinarily its cost is out of proportion to the benefits received. It is probably the best policy to adhere to the recording of only actual facts. It is well for the rules to require that all motions and committee reports be presented in writing, properly signed by the makers of the motion or the committee members, as the case may be. It is well for the secretary to have a thorough knowledge of Robert's Rules of Order or the rules under which the board or commission is acting, and it might be added that there are good points of instruction in the recording of minutes found in Robert's Rules.

If the secretary can exercise any influence in the writing of committee reports (quite frequently these reports are actually compiled by the secretary and signed by the committee members) it might be well for him to keep in mind the answering of those questions which future generations will be bound to ask upon the passage of certain motions and reports. They should be brief and yet not so brief as to give no information concerning the motive actuating the decision by which future generations may learn the lessons of past experience. This is especially true when milestones in the history of the department are being made, when valuable acquisitions are made, important improvements carried out, a definite policy decided upon, or the attitude toward inventions, such as the automobile or the airplane, is determined. All such actions should be accompanied either by resolution or by a rather detailed committee report setting forth the "why and the wherefore" in taking such action.

In the case of some commissions, the minutes of the meetings are printed and when this is done the minutes of the meeting should always be approved *as printed*. This makes the printed minutes official, and the original notes of the proceedings, although of importance and of permanent value (and consequently worth keeping), are not of the legal importance of the printed minutes. Whether the minutes are printed or not, they should be very carefully and permanently kept in just as secure a fashion as possible. A complete index to each fiscal year's minutes should be compiled and there should be a master index made which will apply to all minutes from the date of establishing the commission to the present date. Although indexes take time and are difficult to prepare, a great deal of time will be saved by their compilation. In fact, without indexes it is frequently next to impossible to locate all actions of the commission when they are wanted the most.

No doubt the commission or board will have authority to establish rules and regulations for the conduct of its own affairs and ordinances for the use of the parks and parkways under its jurisdiction not inconsistent with the laws establishing the commission. When this is the case the rules and regulations should be carefully compiled, as should also the ordinances of the department. If possible both should be printed in separate pamphlets, one for the use of the members of the commission and the other for the information of the general public.

To the experienced secretary, many other things related to the keeping of minutes and recording of proceedings will come to mind. For example, in long, intricate and involved condemnation proceedings or bond proceedings, a memorandum of the various steps is necessary and the required legal time between the various steps is of great help.

2. *Official orders where the park department is governed by an individual.* In the cases of commission or city manager forms of government, usually the park department comes under either a director of parks or a commissioner of parks. His actions are limited to the duties and powers prescribed by law much in the same general way as a governing board or commission. His acts, however, are not acts of a commission but are the orders of an individual. The executive head of the park department should carefully compile the orders of his chief, as it goes without saying that such orders should, so far as possible, be entirely routine. They will naturally be of a very general nature and there will be comparatively few of them. These orders are to the executive park head what the minutes of the board or commission meetings are to the head of the park department in the form of government heretofore discussed. Keeping this in mind, the writer will be able to glean sufficient information from the foregoing discussion to enable him to apply them to his particular local situation. For the proper protection against misunderstandings, as well as for the guidance on such situations concerning which there are no particular orders, all official orders should be as carefully kept and as carefully read and thoroughly understood as the minutes of a commission meeting and the policies established by such meetings.

Inventory of possessions. Every park department should carefully make an inventory of its possessions at a set time during each fiscal year. This is necessary for the purpose of making annual financial reports and of establishing liability in the case of land and equipment expenditures, and for insurance collection purposes in the case of fire and theft, etc. There is still another reason, perhaps not so generally taken for granted, and that is that a municipality in a way is a very impersonal thing; the right of ownership must be continually established and its fact recorded in order to prevent

loss of property, in some cases unnecessary expense of duplication of equipment that is not known to exist, and other similar situations. The law usually requires that an inventory be kept, but whether that requirement is present or not it is of extreme importance that an up-to-date inventory be always available. The possessions of a park department usually fall into the headings of real estate, tools and equipment, merchandise and supplies, money and other assets. The question of insurance is so intimately related with that of inventories that it will be discussed here. Upon what costs an inventory should be based is a problem too large for a discussion here. It is a question of first importance requiring the detailed study of standard works on that subject. It will be touched on but incidentally here.

1. *Real estate.* It seems strange to say that a complete list of park possessions should always be available, but in many park departments of the country such a list is actually unobtainable without special research. If your department has not such an inventory, make one immediately.

An inventory presumes both a listing of the items and a value attached to each item. The value of park lands has often been argued from various points of view, but it is rather an elusive thing because the establishment of a park has itself a material influence upon real estate values in the immediate vicinity. And, too, the value of a piece of property depends somewhat on the use to which it can be put, and since parks can be used only for public purposes, their value as a park is different from their value if converted into ordinary uses; since parks are things which are not ordinarily bought and sold as such, no sale value has actually been placed thereon. It seems wise, therefore, in placing an inventory value opposite each park and parkway of the system, to record that value on a basis of what it actually cost the department to acquire it. In the case of donations it will be necessary to place a reasonable value on the tract of land on the basis of what that land was worth in the open market at the time. Donations should be recorded separately from actual cash outlays.

To establish a different basis of cash value on park properties would involve an annual valuation or at least a periodical valuation by a competent group of experts who, in turn, would encounter the difficulties heretofore mentioned, and the result would be of no material value after it had been obtained. Consequently it seems best to place the value of park possessions upon the actual cost price.

The question of land and structural improvement values in our park inventory is not so readily determined, for one set of improvements may wear out and be replaced by another set of similar nature. To record continually a duplication of the cost of structural improvements would obviously create a very wrong impression. However, since the value of making

a periodical valuation of the complete land and structural improvements would be questionable, it is probably best simply to record the accumulated costs of such improvements to date.

All this discussion is concerning a summary of a park and parkway inventory and does not pertain to the inventory of material, supplies, equipment, buildings and similar insurable property concerning which more will be spoken later on.

Land records. Continuing the discussion of the inventory as applied to real estate, it is of sufficient importance to take the space here to describe a method of recording, indexing and filing deeds, abstracts, land plats, etc. The system here described is not the only one possible but the concrete examples given will open up various possibilities to other cities and park departments.

There should be available an accurate land survey plat of each piece of park property. In some cases the law requires that such a plat be on file with the registrar of deeds of the local county. In these cases the number of copies of each plat is provided for by the law or the registrar of deeds himself and these plats are usually required to be of a uniform size. Usually there appears on the plat (*a*) a correct representation of a true survey of the park itself drawn to some arbitrary scale sufficiently large to accurately show all details; (*b*) a dedication of the form shown below; (*c*) surveyor's certificate; (*d*) the usual stamps and seals of the registrar of deeds office.

The dedication usually reads something like the following:

"I hereby certify that the Board of Park Commissioners of the City of ....., owners of the following described property situated in the County of ....., State of ....., to wit:

(Description of property)

has caused the same to be surveyed and platted as (official name of park) said land being colored.....on the plat.

.....

Secretary, Board of Park Commissioners."

The surveyor's certificate usually reads as follows:

"I do hereby certify that I have surveyed the property described on this plat as (official name of park), that this plat is a correct representation of said survey; that all distances are correctly shown on the plat in feet and decimals of a foot; that the monuments for guidance of future surveys have been correctly placed in the ground as shown on the plat and that the outside boundary lines are correctly designated on the plat.

.....

Surveyor."

Both the dedication and the surveyor's certificate are usually subscribed and sworn to before a notary public.

The complete file of these plats may be placed in a book for ready reference. It is this book that is usually referred to when any question of ownership or boundaries arises, and therefore it should be complete and up-to-date at all times. Frequently it happens that various conditions have been attached to deeds to some of the property or that for some reason or other the abstract to the property may be called for at any time. For this reason the plat should be so made that it indicates parcels of land conveyed by each deed, a copy of which will be in the office of the secretary. These parcels have placed upon them some index number or other identification mark so that the deed can be readily obtained from the files. If the deeds are numbered the deed number can be placed on the parcel of land on the plat, or book and page number in which the deed is recorded in the register of deeds office may be placed on the parcel of land represented on the plat. Any designating mark that will readily locate or identify the deed will be sufficient.

There should, too, be a separate system of parceling carried out in a similar manner to locate the abstracts to the property. Probably a third system of parceling may be necessary in complicated cases in order to locate the various proceedings of acquisition which have been completed in the acquisition of the park itself. More often, however, the important deeds of the acquisition can be recorded by a stamp or by footnotes. These suggestions take it for granted that there will be kept a complete and systematic file of all deeds and miscellaneous papers having to do with the title of property, and that a separate file will be kept for the abstracts. It is possible, of course, to combine the abstracts and the deeds into one file, but too often the abstracts cover a great deal more property than do the individual deeds, and consequently the combining of the two into one file often becomes very complicated.

It is also taken for granted that a complete file of each proceeding for the acquisition of park property is maintained. These files are matters of individual design for the case of each particular park system. Experience will tell exactly which additional files and indexes will be necessary to keep in this connection, but whatever the system is the answers to the following questions should be always readily available from the records kept:

How much park property is owned?

What are the exact boundaries of each park in the system?

Under what legal proceedings was each park acquired?

On what pieces of park property are there conditions of conveyance attached which conditions have not been fulfilled?

Be able to substantiate the title claim to every piece of park property owned.

2. Inventory of structures. An inventory of all insurable structures, particularly buildings, should be available at all times. This inventory is based upon the present replacement cost of the building, less its depreciation over the life of the structure to date. This method of keeping the inventory is probably the most widely accepted of the many varied methods and usually will satisfy and be acceptable to the insurance companies of most states. However, since this inventory is kept almost for the sole purpose of being properly protected by insurance, it is well to consult local underwriters as to the proper methods of its make-up. In some cases where the system is large enough and where the insurance companies are so equipped, they may be willing to keep up such valuations for their clients, but even under these circumstances it is well for the park department to obtain at least periodically its own independent valuations.

3. Inventory of tools, equipment, merchandise and supplies. This inventory is the one most common, and the one with which, unfortunately, almost everyone is more or less familiar — unfortunate because the popular knowledge of this kind of inventory has caused indistinct classifications of articles resulting in aggravating misunderstandings. As a result, a great deal has been written to clarify the situation. The following description of classifications is taken from the orders of the public examiner's department of a state which requires all municipalities and departments thereof to make annual inventories and is a fair example of the general trend of thought on inventory classifications:

Equipment. Appliances, furniture, implements, vehicles and things adapted to continuing use acquired to facilitate the transaction of business of aid in the accomplishment of purposes and add to the comfort of persons, including live stock used for hauling, transportation, dragging, etc., and animals for the furnishing and production of foods or products capable of being used in the manufacture of commodities; and including every thing attached to the building by its own weight or by cleats to give it stability and can be easily removed without in any way interfering with the efficiency of the building or defacing it, such as tools, implements, machinery, vehicles, harness, horses, cattle, pigs, poultry, tables, chairs, beds and bedding, crockery and glassware, cutlery, kitchen utensils, books (other than record), apparatus and instruments, furniture and furnishings, files and cabinets, safes not attached to walls, movable stoves and radiators, pictures and other removable decorative objects, writing, talking and computing machines.

Supplies. Commodities and things needed for the transaction of business, sustaining of life, production of heat, energy and power, capable of being used only once, the portion used being of no further value for the purpose originally intended, such as stationery, provisions, fuel, clothing, cleaning and disinfecting supplies, household supplies, office supplies, postage, library and educational supplies, forage supplies, blank books and forms.

Material. All things other than supplies, equipment or structures, which are suitable by nature or treatment as part of supplies, equipment or structures, or articles which are a part of a completed thing but which standing alone are not adapted to continuing use, such as brick, lumber, stone, cement and building material, fibre, metal and other supplies, for manufacturing.

Merchandise. Commodities, articles and things kept in stock and disposed of for cash or its equivalent, such as stationery, books, office supplies, confectionery and foods, twine, machinery, vehicles, implements and clothing.

Quantities, of course, are recorded as actually counted, and in most departments the count is compared with previous inventories and receipts and issues since last inventory and consequently every article accounted for.

A form containing the following headings can be used in taking the inventory of tools and equipment: Previous Inventory, Year's Purchases,

Form Storehouse 5 4–23

CAUTION:—Each foreman is held strictly accountable for all articles delivered to him. To avoid mistakes you must count and inspect all deliveries and report any errors on the back of this receipt.

Board of Park Commissioners

GENERAL STOREHOUSE

List supplies and tools on separate sheets

RECORD OF SUPPLIES OR TOOLS TRANSFERRED

Date _____ Number _____

The following articles have been delivered in good condition.

To _____ For use at _____ Park

From _____ Foreman at _____ Park

QUANTITY	Unit of Measure	ARTICLE	COST	

Received the above articles in good condition.

Account Dr. Signed

Account Cr. Foreman at Park

FIGURE 4

THIS FORM IS PRINTED IN TRIPLICATE, EACH OF THE FORMS BEING OF A DIFFERENT COLOR

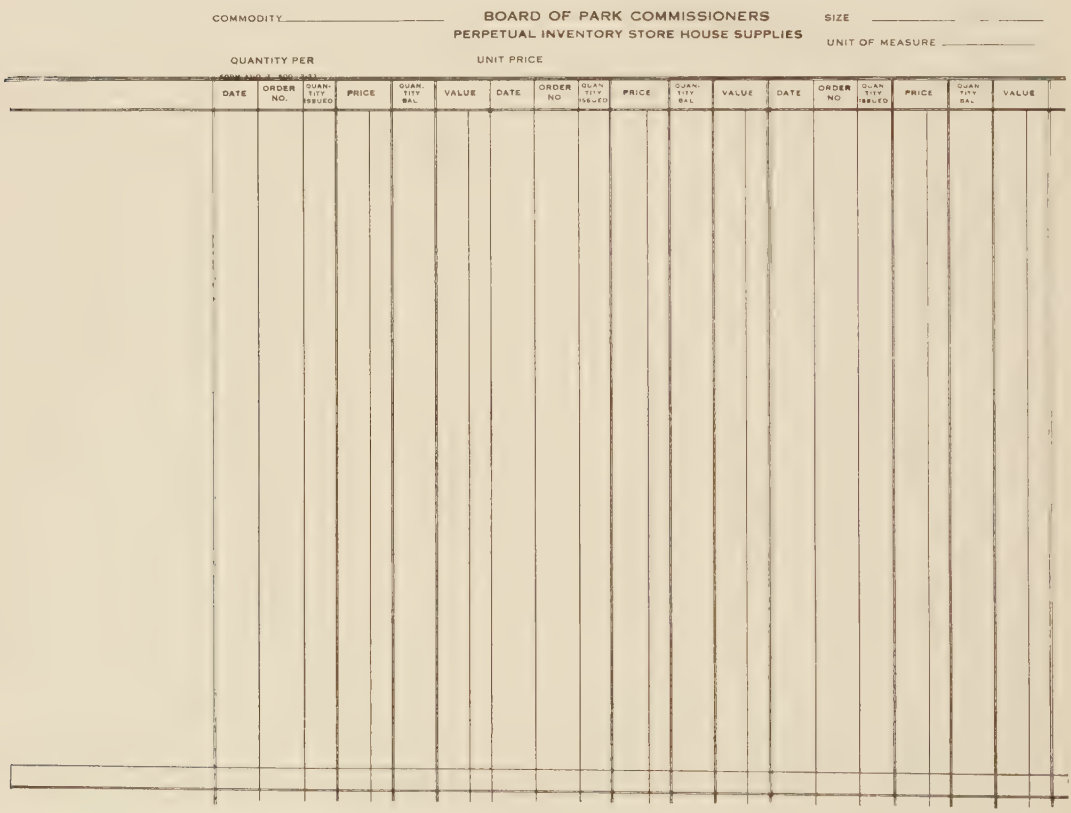
One copy is transmitted with the tools and equipment to the foreman on the job and two copies are kept by the storekeeper for filing.

Price, Worn Out, Present Inventory, Article, Price, Amount, Location. In order to keep track of the tools and equipment issued from the storehouse during the season, the form shown in Figure 4 is used. One copy of this is transmitted with the tools and equipment to the foreman on the job, and two are kept by the storekeeper for filing in two different manners.

Merchandise and supplies are best kept track of through the operation of a supply storehouse and the keeping of perpetual inventory records. The office records usually consist of a book record of purchases, issues, prices and balances similar to Figure 5.

When issues are made from stock, various copies of a form similar to Figure 6 are made out, one going to the office, enabling the office to maintain the perpetual inventory record above outlined.

A perpetual inventory record may be kept in various ways, even by tabulating and bookkeeping machines, but the principle is still the same as the one here outlined.


COMMODITY _____ BOARD OF PARK COMMISSIONERS SIZE _____

PERPETUAL INVENTORY STORE HOUSE SUPPLIES UNIT OF MEASURE _____

QUANTITY PER UNIT PRICE

DATE	ORDER NO.	QUANTITY ISSUED	PRICE	QUANTITY BAL.	VALUE	DATE	ORDER NO	QUANTITY ISSUED	PRICE	QUANTITY BAL.	VALUE	DATE	ORDER NO	QUANTITY ISSUED	PRICE	QUANTITY BAL.	VALUE

FIGURE 5

FORM FOR KEEPING PERPETUAL INVENTORY OF MERCHANDISE AND SUPPLIES AT THE STOREHOUSE

A book record similar to this form is kept at the central office for the department.

CITY OF

Board of Park Commissioners

ISSUES FROM STOREHOUSE

Date_____ 192___

To _____

For _____

Requisition No. _____ Job No. _____ Per inst. of _____

QUANTITY	ARTICLE		VALUE	

No. E 7533

MULLOWNEY PRTG. CO., MINNEAPOLIS, MINN

FIGURE 6. No. 1

CITY OF

Board of Park Commissioners

Date_____ 192___

To _____

For _____

Requisition No. _____ Job No. _____ Per inst. of _____

QUANTITY	ARTICLE

No. E 7533

MULLOWNEY PRTG. CO., MINNEAPOLIS, MINN.

Received of Board of Park Commissioners all articles listed on issue slip bearing the same number as this receipt, a copy of which was delivered to me.

Driver _____ Date _____ 192___ Per _____

No. E 7533

FIGURE 6. No. 2

CITY OF

Board of Park Commissioners

Date _____ **192**__

To _____

For _____

Requisition No. _____ **Job No.** _____ **Per inst. of** _____

QUANTITY	ARTICLE

MULLOWNEY PRTG CO., MINNEAPOLIS, MINN.

No. E 7533

FIGURE 6. No. 3. FORMS USED IN ISSUING STOCK FROM THE STOREHOUSE

One form goes to the general office of the department providing data for maintenance of perpetual inventory mentioned under Figure 5; one form to person receiving the stock and one retained by the storekeeper.

In pricing the articles the general rule of using the cost price or market price, whichever is the lowest, is generally accepted. There are times to be sure, for example in 1920–1921, when it was even advisable, especially for business concerns, to take even a more conservative viewpoint toward inventories. This was true at that time because prices appeared to have reached a point of extreme inflation, and rather a precipitous drop was apt to occur at any time. The actual facts eventually sustained that opinion. However, when prices are fairly stable, one is generally safe in using the rule, cost price or market price, whichever is the lower.

Insurance. For want of a better place, the item of insurance will be briefly discussed here.

Insurance is a specialized work and the underwriters should be freely consulted for advice on all occasions. The amount of insurance to be carried on various properties and classes of risks will be the result of the policy of the governing body. But should the executive in charge have any discretion at all he will see that all his buildings and inflammable structures of any kind are amply protected from loss by fire, tornado or any similar disaster which might occur in that locality. Exactly to what extent coverage should be obtained depends upon other factors than the judgment of the department itself, and of these the character of the improvement is not the least. Generally speaking, fire insurance for eighty per cent of the value of the property would ordinarily be ample, but individual cases arise which may necessitate one hundred per cent coverage. Still other cases may require only fifty per cent. If co-insurance is carried, particular care should be taken of the valuation of the property itself, that its real value actually corresponds with the value on the insurance policy. It is well, if possible, to have no more than one insurance company on each building so that all policies in connection with any one building may be concurrent and that facility of adjustment may be readily obtained. Other forms of insurance, such as general liability, workmen's compensation, robbery, theft, etc., should all be investigated carefully and the entire problem laid before the local insurance underwriters to see that all phases of the work are amply protected.

It is rare that the park department will find it to its advantage to carry its own insurance on any kind of a risk, except perhaps workmen's compensation.

Financial Records of Municipal Funds.

1. Funds. An understanding of municipal funds is prerequisite to a clear understanding of municipal finance, consequently it is discussed first in the financial records.

Classification and definition. There are two general classes of funds known as (1) general or current expense funds and (2) special funds. General funds are available for any purpose which the spending body has authority to use money for. Special funds are restricted in their use to special items of expenditure. The revenues for general funds are the receipts from taxes and miscellaneous general sources.

Special funds. Special funds include (*a*) capital funds, (*b*) sinking funds, and (*c*) special and trust funds. They are usually the result of revenues obtained from the sale of municipal securities, and funds so derived are

used for a special capital expenditure, such as the acquisition of a special piece of park property or the construction or improvement of a certain park. A fund so created is a capital fund, or it may be termed the construction or the acquisition fund, as the case may be.

The municipal securities sold to create the capital fund usually take the form of bonds, which in turn may be secured either by general taxation or by special assessment against specially benefited property. In either case the funds accrued from receipts obtained from the collection of these special assessments are tax levies, and their subsequent reinvestment, if any, constitutes what is generally known as the sinking fund or sometimes called the interest and certificate fund. It is that fund which is accrued for the payment of interest on the bonds and for the repayment of the principal.

Special and trust funds include all classes of funds which are reserved for special purposes, usually at the instance of some trust for which the city is administrator or trustee. Park departments are especially apt to have trust funds.

Operating fund. There might be added still another classification of funds which is created simply as an aid to a common procedure. This fund, which might easily assume the name of operating fund, is often only an accounting term or book accounting, there being no actual cash existing in the fund or in any case a comparatively nominal amount. The object of the fund is to provide a means of carrying accounts whose income and expense are designed to equalize during the year, or where the operation of revenue producing activities can be carried on and the net results transferred to the general fund at the close of the year's business, thus eliminating from the accounts of the general fund extraneous matter which in some instances may hamper the efficiency of the financial procedure of the municipality.

Summary of fund classification: (1) General funds; (2) Special funds—capital funds, sinking funds and special funds; (3) Operating funds.

Fund procedure. The purpose of establishing anything but a general fund is to ensure that means are provided for the carrying out of particular projects. Those in authority are responsible to the people who elected them to office for the acts which are carried out, and when funds are once provided for a specific object they want to be sure that the funds made available are used to carry out that object and for no other purpose, and also that the funds provided are not exceeded by the expending officers. Inasmuch as the creation of funds is necessary, it becomes equally necessary that the accounting processes set up in the offices of a park department shall be so designed as to present statements at stated periods showing the financial status of each of the funds operating within the department.

There are four principal steps in connection with funds which have a bearing on the records to be kept. They are: (1) The establishment of the fund; (2) The authorization of expenditure; (3) The operation of funding; (4) The operation of spending.

Funds are generally established by legislative act, particularly in regard to general and special funds, and special funds are created from time to time by the governing body in accordance with the terms of the law under which that governing body is operating. Many park departments are not particularly interested in the establishment of the fund, inasmuch as their funds are a part of a general city budget and are provided for as an appropriation from the common council or principal governing body of the city. The authorization for expenditure is ordinarily an act of the governing body. Sometimes it must be provided for by the passage of an ordinance; at other times by the passage of a resolution. As previously stated, the establishment of the funds and authorization for expenditure in many park departments are for all practical purposes combined in the one term "appropriation" by the governing body of the city. Likewise those departments will not be particularly interested in the operation of funding which consists in the collection of revenues to create the fund and to provide means for the fund's retirement and payment of its interest.

The operation of spending is common to all agencies of the city government including park departments and it is the one requiring the greatest number of financial records. Spending includes: (1) Issuance of purchase orders or contracts; (2) The auditing of such bills, payrolls and invoices; (3) Payment of the approved bills by the treasurer.

2. *Requirements of park accounting.* Municipal accounting purposes to provide historical records of financial transactions, a complete account of revenue and expense on all special funds, and management records in the form of statements and financial reports on general and operating fund procedure. It is not sufficient for a park department to make a report only on receipts and disbursements in the various funds which, after all, is only an indication of the honesty of the officials charged with the duty of receiving and disbursing the public funds. Park business, just as much as a mercantile business, requires strict and careful management and consequently statements must be provided to enable the park executive to manage his expenditures just as scientifically as the merchant. As a matter of fact, in many park departments the operation of revenue-producing activities is quite an item and is of great enough magnitude and importance to demand very detailed records.

The budget. In most municipalities it has become a matter of legal requirement for the various departments of the city government to adopt

a budget of receipts and expenditures at the beginning of each fiscal year. Whether it is required or not, every park department, however governed, which derives its funds from an appropriation that is a part of the general city appropriation, should provide and adopt a budget, and carry on its activities in accordance with the provisions in that budget.

A budget is an estimate of the receipts and expenditures for the department for the forthcoming year. The act of making up the budget requires foresight into the coming year's business and necessitates premeditated planning; from the taxpayers' point of view it establishes a program of activity in which he is much interested. The park department is committed to this program by the adoption of the budget, and all financial transactions during the ensuing year are guided in accordance therewith. Although all budget experts do not agree on the exact form the budget should take, there is a sufficient agreement to enter into at least a general discussion of the form here. If your park department is operating under a separate governing body which has the power to levy taxes, its procedure is identical with the procedure of the compilation of a general city budget. In those cases where the park department is but one of the sub-departments of the general city government, the general method followed is for the proper authorities of the city to call for budget estimates to be submitted by all departments by a certain date. These departments, including the park department, compile their anticipated receipts and expenditures for the coming fiscal year, arranged into classifications which have now become fairly well standardized. Such a classification follows:

100 Personal service.

101 Salaries and wages, permanent.
102 Salaries and wages, seasonal.
103 Salaries and wages, temporary.
104 Fees and compensation for expert services.
105 Teams with drivers.

200 Contractual services.

201 Transportation of persons.
202 Telephone and telegraph.
203 Freight, express and drayage.
204 Hire of horses and of vehicles.
205 Subsistence of persons.
206 Subsistence and care of animals.
207 Storage and care of equipment and materials, etc.
208 Advertising.
209 Printing and binding.
210 Water rent.
211 Ice and drinking water.
212 Lighting public buildings.
213 Lighting streets and parks.
214 Power, rental of.
215 Heating public buildings.
216 Gas and electricity.
217 Cleaning service.
218 Music and entertainment.
299 Contractual service not otherwise classified.

300 Supplies.

301 Office.
302 Postage.
303 Fuel.
304 Gasoline, kerosene, distillates, etc.
305 Lubricants.
306 Mechanical, electrical and shop.
307 Provisions.
308 Animal (forage veterinary zoo).
309 Wearing apparel and dry goods.
310 Recreational.
311 School.
312 Laboratory, medical and chemical.
313 Agricultural and botanical.
314 Street sprinkling.
315 Cleaning, toilet and laundry.
316 Lighting.

317 Bindery.
399 Supplies not otherwise classified.

400 Fixed charges and contributions.

401 Rent.
402 Insurance.
403 Pensions.
404 Redemption of debt.
405 Contributions and awards.
406 Interest.
407 Taxes and fees.

500 Special and contingent.

501 Premiums and accruals.
502 Miscellaneous losses.
503 Refunds and indemnities.
504 Examination of titles.

600 Temporary expenditures.

601 Materials.
602 Refectory and lunch room supplies.
603 High school textbooks and school supplies.
604 Equipment.
605 Accommodation loan.

700 Repairs and replacements.

701 Office furniture and appliances.
702 Furniture and furnishings other than office.
703 Fire apparatus other than motorized equipment.
704 Motor transport equipment.
705 Heat, light, power and refrigerating plants.
706 Shop equipment and mechanics' tools.
707 Miscellaneous machinery and implements.
708 Horse-drawn vehicles and harness.
709 Animals.
710 Books, maps, charts.
711 Instruments and apparatus.
712 Medical and surgical appliances.
713 Educational and recreational.
719 Equipment not otherwise classified.
720 Land.
730 Buildings.
740 Other structures.

800 Permanent improvements and acquisitions.

801 Office furniture and appliances.
802 Furniture and furnishings other than office.
803 Fire apparatus other than motorized equipment.
804 Motor transport equipment, other than fire apparatus.
805 Heat, light, power and refrigerating plants.
806 Shop equipment and mechanics' tools.
807 Machinery and implements.
808 Horse-drawn vehicles and harness.
809 Animals.
810 Books, maps, charts.
811 Instruments and apparatus.
812 Medical and surgical appliances.
813 Educational and recreational.
819 Equipment not otherwise classified.
820 Land and improvements.
830 Buildings.
840 Structures other than buildings.
850 Rights and privileges.

900 Automotive equipment.
Rental of equipment.

901 Hire of automobiles.
902 Hire of trucks, tractors, etc.

Operation and maintenance of city-owned equipment.

903 Automobiles.
904 Motor cycles.
905 Ambulances, busses and patrol wagons.
906 Trucks.
907 Tractors.
908 Fire apparatus.
909 Miscellaneous.

Outlay, purchase or construction price of city-owned equipment.

910 Automobiles.
911 Motor cycles.
912 Ambulances, busses and patrol wagons.
913 Trucks.
914 Tractors.
915 Fire apparatus.
916 Miscellaneous.

1000 Revenue deductions not otherwise classified.

1001 Transfer of revenue.
1002 Cancellations and abatement of taxes.

It will probably be necessary in many of the classifications to support the budget requests for expenditures by a schedule of salaries proposed to be paid to the various classes of employees, and by various other schedules which will become apparent during the making up of the budget itself. These departmental budget requests are gathered together and compiled into one general city budget, or, in the case of park departments having

their own governing bodies, the budgets of the sub-departments are gathered together and compiled into one consolidated budget.

When the total expenditure is tentatively agreed upon, the tax rate is determined in the following manner: The difference between the total expenditures and the miscellaneous receipts from revenue-producing activities and other sources is determined and from this difference is subtracted the deficiency in annual tax collection which is an empirical percentage of the total amount to be raised by taxation. This divided by the assessed valuation gives the tax rate.

Budget for revenue-producing activities. It is perfectly feasible to carry the budget idea even into revenue-producing activities, such as the operation of refectories, golf links and boat docks, even as the budget procedure is being adopted by manufacturing and merchandising concerns the country over. Here the question of revenue, which represents sales, is quite frequently a goal and may be missed widely, but if proper and careful analysis and planning are taken in its estimating, the goal is ordinarily reasonably close to the budget estimate of income. The classification of expenditures will probably have to be altered from the classification heretofore enumerated in order to be of service for managing purposes. However, expenditures can be classified in accordance with the codes above mentioned if required by the tax-reviewing body of city government, but unless reclas-

MISCELLANEOUS REVENUE STATEMENT	Actual Receipts of 1924	Actual Receipts of 1925	Estimated Receipts of 1926	Estimated Receipts of 1927
Special Assessment Collections:				
Road Oiling	$2,812.87	*.....	.....	.....
Tree Planting	5,741.19	*.....	.....	.....
Park Acquisitions	2,807.86	$ 2,743.24	$ 2,480.00	$ 2,480.00
	$ 11,361.92	$ 2,743.24	$ 2,480.00	$ 2,480.00
Revenue-Producing Accounts: (Gross Revenue)				
Boats—Calhoun	$ 9,858.40	$ 10,018.45	$ 9,000.00	$ 9,000.00
Boats—Harriet	9,976.65	6,638.85	6,000.00	4,000.00
Baths—Calhoun	4,514.44	5,150.82	5,000.00	2,500.00
Baths—Camden	356.00	375.00	400.00	200.00
Baths—Glenwood	561.45	605.35	500.00	250.00
Baths—Nokomis	8,770.68	8,351.80	8,100.00	4,050.00
	$ 34,037.62	$ 31,140.27	$ 29,000.00	$ 20,000.00
Miscellaneous:				
Comfort Station	$ 1,764.70	$ 1,674.16	$ 1,700.00	$ 1,600.00
Canoe and Boat Licenses	3,272.00	2,827.75	2,300.00	2,000.00
Privileges	670.00	715.00	600.00	600.00
Court Collections	11,761.00	10,567.00	8,000.00	6,000.00
Skating Rinks	1,927.85	3,231.50	3,000.00	3,000.00
Rental—Buildings	4,267.39	2,463.40	2,400.00	2,800.00
Refectory Profit (Net)	14,192.03	6,326.13	8,000.00	8,000.00
Minnehaha Auto Tourist	.....	3,550.84	3,500.00	3,000.00
Nursery Sales and Transfers	13,809.77	8,504.60	8,000.00	.....
Miscellaneous	5,079.39	2,024.70	500.00	520.00
Accounts Receivable Prior	3,524.23	82.50	.....	.....
Park Teams	2,273.00	*.....	.....	.....
Park Trucks	11,415.50	*.....	.....	.....
Sale of Automobiles	.....	.....	5,520.00	.....
	$ 73,956.86	$ 41,967.58	$ 43,520.00	$ 27,520.00
Total Miscellaneous Revenue	**$119,356.40**	**$ 75,851.09**	**$ 75,000.00**	**$ 50,000.00**
Cash Balance from Preceding Year	3,848.55	(1) 45,752.70	31,482.47	3,482.88
Total Receipts Other than Taxes	**$123,204.95**	**$121,603.79**	**$106,482.47**	**$ 53,482.88**

sified into items familiar to managers of these departments, statements of expenditures will be of little value for managing purposes.

To be more specific, the budget was made up anticipating a certain number of dollars as the gross sales for the year. It was estimated that the merchandise to be dispensed would cost a certain amount of money and that it would take a certain amount of labor to dispense the merchandise; that the upkeep of the buildings and overhead management would be a certain amount and that the sum of the expenditures would be less than the gross sales by a certain amount which would be profit. The manager thinks along these lines and consequently his classification of expenditures

Code No.	ITEMS OF EXPENDITURE	Actual Expenditure of 1924	Actual Expenditure of 1925	Proposed Expenditures for 1926	Estimated Requirements for 1927	Amount Above or *Below* Estimate for 1926
100	**Personal Service:**					
101	Salaries and Wages—Permanent ..	$145,393.16	$136,729.84	$140,291.00	$138,516.00	*$1,775.00*
102	Salaries and Wages—Seasonal	23,440.55	21,888.03	22,110.00	20,795.00	*1,315.00*
103	Salaries and Wages—Temporary ...	140,977.09	157,223.44	160,257.00	160,854.00	597.00
104	Compensation for Expert Service ..	296.00	50.00	50.00	.....	*50.00*
	Total—Personal Service	**$310,106.80**	**$315,891.31**	**$322,708.00**	**$320,165.00**	*$2,543.00*
200	**Contractual Service:**					
201	Transportation of Persons	$ 647.00	$ 579.61	$ 600.00	$ 600.00	.....
202	Telephone and Telegraph	1,269.98	1,552.98	1,356.00	1,364.00	8.00
203	Freight, Express and Drayage	25.64	95.55	90.00	70.00	*20.00*
204	Hire of Horses	10,616.11	9,014.88	7,420.00	7,187.00	*233.00*
206	Subsistence of Animals	35.28	.....	.....	.....	.....
207	Storage	.....	33.00	22.00	.....	*22.00*
208	Advertising	779.30	808.64	800.00	800.00	.....
209	Printing and Binding	2,519.53	4,267.26	4,175.00	4,085.00	*90.00*
210	Water Rent	3,003.97	3,669.76	3,990.00	4,590.00	600.00
211	Ice and Drinking Water	40.00	50.00	50.00	50.00	.....
212	Lighting Public Buildings	2,064.26	2,715.94	2,993.00	3,243.00	250.00
213	Lighting Parks	19,983.62	21,217.40	24,900.00	27,400.00	2,500.00
214	Rental of Power	601.81	341.83	2,540.00	3,375.00	835.00
216	Gas and Electricity	411.26	423.24	427.00	427.00	.....
217	Cleaning Service	1,825.25	1,657.31	2,015.00	1,865.00	*150.00*
218	Music and Entertainment	19,997.54	20,668.76	16,660.00	16,660.00	.....
299	Miscellaneous Service	5,364.12	2,146.63	3,293.00	2,890.00	*403.00*
300	**Supplies:**					
301	Office Supplies	1,519.18	2,026.55	2,505.00	2,280.00	*225.00*
302	Postage	1,423.20	893.15	900.00	900.00	.....
303	Fuel	4,789.98	6,059.49	6,660.00	7,835.00	1,175.00
306	Mechanical and Shop Supplies	7.22	5.14	5.00	.....	*5.00*
307	Provisions	.....	3.75	.....	.....	.....
308	Animals	476.84	335.74	340.00	330.00	*10.00*
309	Wearing Apparel and Dry Goods ...	242.85	256.73	200.00	200.00	.....
310	Recreational Supplies	1,242.50	153.33	195.00	128.00	*67.00*
312	Medical and Chemical Supplies	65.42	148.96	124.00	130.00	6.00
313	Agricultural and Botanical	2,233.77	2,855.08	3,502.00	3,006.00	*496.00*
314	Street Sprinkling Supplies	3,817.11	3,835.32	3,950.00	3,900.00	*50.00*
315	Cleaning, Toilet and Laundry	2,404.38	1,710.34	1,923.00	1,652.00	*271.00*
316	Lighting Supplies	498.61	300.43	381.00	307.00	*74.00*
399	Supplies Unclassified	2,784.79	2,082.79	2,229.00	1,854.00	*375.00*
400	**Fixed Charges:**					
401	Rent	.....	125.00	.....	.....	.....
402	Insurance	2,383.68	1,807.09	2,606.00	2,222.00	*384.00*
404	Redemption of Debt	5,100.00	5,395.70	5,400.00	5,560.00	160.00
405	Contributions and Awards	500.00	25.00	25.00	25.00	.....
406	Interest on Bonds	2,450.00	2,450.00	2,450.00	2,450.00	.....
407	Taxes and Fees	1,185.56	1,979.70	2,265.00	2,015.00	*250.00*
500	**Special and Contingent:**					
502	Miscellaneous Losses	.93	.....	.....	.....	.....
503	Refunds and Indemnities	2,961.84	2,375.62	2,455.00	2,340.00	*115.00*
504	Examination of Titles	3.28	27.84	.....	.....	.....
600	**Temporary Expenditures:**					
602	Articles for Resale	907.73	948.97	1,030.00	983.00	*47.00*
700	**Repairs and Replacements:**					
701	Office Furniture and Appliances ...	163.15	1.35	.....	.....	.....
702	Furnishings Other than Office	59.09	.....	5.00	.....	*5.00*
705	Heat, Light and Power	34.32	226.85	495.00	180.00	*315.00*
706	Shop Equipment	1,024.16	335.12	378.00	295.00	*83.00*
707	Miscellaneous Machinery	1,633.78	733.51	685.00	536.00	*149.00*
708	Horse-Drawn Vehicles	86.07	203.23	200.00	150.00	*50.00*
711	Instruments and Apparatus	10.78	4.41	10.00	10.00	.....
713	Recreational	3,030.72	5,709.66	5,475.00	4,718.00	*757.00*
719	Miscellaneous Equipment	890.34	315.24	370.00	285.00	*85.00*
720	Land	5,976.29	2,087.60	6,159.00	6,557.00	398.00
730	Buildings	4,249.01	9,066.80	8,505.00	7,476.00	*1,029.00*
740	Other Structures	15,569.26	9,871.67	20,718.00	23,228.00	2,510.00

	ITEMS OF EXPENDITURE	Actual Expenditure of 1924	Actual Expenditure of 1925	Proposed Expenditures for 1926	Estimated Requirement for 1927	
800	**Acquisitions and Improvements:**					
801	Office Furniture	$ 15.81	$ 1,064.49	$ 760.00	$.....	$ 760.00
802	Furnishings Other than Office	739.82	226.04	.....	.....	.....
803	Fire Apparatus	.....	567.68	.....	.....	.....
806	Shop Equipment and Tools	1,211.49	.....	300.00	300.00	.....
807	Machinery and Implements	2,355.09	5,688.26	2,000.00	2,000.00	.....
813	Recreational	6,060.40	97.57	3,000.00	2,000.00	1,000.00
814	Bath House Equipment	5,246.02	1,446.61	.....	.....	.....
819	Miscellaneous Equipment	2,489.13	1,195.87	1,000.00	1,000.00	.....
820	Land Improvement	7,378.91	3,349.15	3,655.00	.....	3,655.00
830	Buildings	7,563.57	734.81	.....	.....	.....
840	Other Structures	296.38	4,743.87	3,350.00	.....	3,350.00
900	**Automotive Equipment:**					
901	Hire of Automobiles	.....	.....	1,680.00	1,995.00	315.00
902	Hire of Trucks	16,879.90	21,678.26	16,895.00	18,115.00	1,220.00
903	Operation of Automobiles	2,319.64	.....	.....	.....	.....
906	Operation of Trucks	2,261.22	.....	.....	.....	.....
909	Operation of Other Equipment	2,058.29	1,825.36	1,876.00	1,767.00	109.00
910	Purchase of Autos	4,314.04	4,187.44	.....	.....	.....
913	Purchase of Trucks	1,427.42	.....	.....	.....	.....
914	Purchase of Tractors	1,275.00	4,199.69	2,600.00	1,200.00	1,400.00
916	Miscellaneous	.....	.....	3,000.00	2,000.00	1,000.00
	Total—Other than Personal Service	**$202,802.64**	**$184,605.05**	**$193,592.00**	**$186,535.00**	$7,057.00
	Total Requirements	**$512,909.44**	**$500,496.36**	**$516,300.00**	**$506,700.00**	$9,600.00

CONDENSED BUDGET ESTIMATE	Actual Expenditures 1924	Actual Expenditures 1925	Proposed Expenditures for 1926	
Requirements for Year:				
Personal Service	$310,106.80	$315,891.31	$322,708.00	$320,165.00
Other than Personal Service	202,802.64	184,605.05	193,592.00	186,535.00
	$512,909.44	$500,496.36	$516,300.00	$506,700.00
Less Misc. Revenue Receipts	123,204.95	121,603.79	106,482.47	53,482.88
Raised by Taxation	**$389,704.49**	**$378,892.57**	**$409,817.53**	**$453,217.12**
Estimated Tax Collection Shortage	.....	.....	.....	**2,284.03**
Tax Levy Requested for 1927	.....	.....	.....	**$455,501.15**

FUNCTIONAL DISTRIBUTION OF EXPENDITURES FROM PARK GENERAL FUND

Police	$ 66,007.96	$ 65,324.18	$ 65,975.00	$ 65,000.00	$ 975.00
Animals	62.13	.....	.....	.....	.....
Lighting Parks	20,041.16	21,242.87	25,000.00	27,500.00	2,500.00
Forestry Work in Parks	4,424.98	24,579.37	6,200.00	7,454.00	1,254.00
Music	20,025.04	20,982.41	16,660.00	16,660.00	.....
Road Oiling	6,607.34	4,229.13	4,300.00	4,300.00	.....
Land Purchase	2,583.84	83.94	.....	.....	.....
Improvements	10,192.74	7,026.90	13,755.00	*11,000.00	2,755.00
Replanting Trees	.....	5,978.09	3,000.00	4,000.00	1,000.00
Interest on Bonds	2,450.00	2,450.00	2,450.00	2,450.00	.....
Tools and Equipment	16,668.04	18,405.95	11,900.00	8,500.00	3,400.00
Special Repairs to Buildings	129.15	2,972.37	5,000.00	5,000.00	.....
Special Road Repairs	2,115.85	1,284.56	4,000.00	4,000.00	.....
Water Rent	2,611.77	3,176.73	3,500.00	3,600.00	100.00
Floriculture	8,230.21	8,815.50	9,000.00	9,000.00	.....
Care of Tools and Equipment	20,244.66	21,039.18	22,400.00	21,700.00	700.00
Administration	58,415.05	59,631.60	61,400.00	60,080.00	1,320.00
Nursery	4,853.48	7,236.03	7,800.00	7,770.00	30.00
Park and Parkway Maintenance	197,408.59	174,623.39	206,200.00	203,066.00	3,134.00
Boats—Calhoun	6,624.58	7,166.58	7,360.00	7,160.00	200.00
Boats—Harriet	9,019.23	7,522.71	6,500.00	4,000.00	2,500.00
Baths—Calhoun	10,663.91	9,372.92	9,500.00	8,500.00	1,000.00
Baths—Camden	3,398.64	2,895.59	3,250.00	6,000.00	2,750.00
Baths—Glenwood	3,227.67	3,089.46	3,300.00	3,000.00	300.00
Baths—Nokomis	13,891.75	8,388.89	9,550.00	8,500.00	1,050.00
Park Teams	1,721.08	.....	.....	.....	.....
Park Trucks	9,091.33	.....	.....	.....	.....
Preliminary Surveys	15.77	1,008.53	2,900.00	2,900.00	.....
Park Acquisitions and Improvements	5,395.70	5,395.70	5,400.00	5,560.00	160.00
Sidewalk Construction	3.27	.....	.....	.....	.....
Reserve for Miscellaneous	1,208.62	2,178.08	.....	.....	.....
Improvement—Street Tree Planting	5,575.90	.....	.....	.....	.....
Auto Tourist Camp	.....	4,395.70	*.....	*.....	.....
Total	**$512,909.44**	**$500,496.36**	**$516,300.00**	**$506,700.00**	9,600.00

should be made up along these lines and not in accordance with the code used in the general fund budget.

If the records pertaining to the operation of these businesses can be held together in an operating fund and only the net result used in the make-up of the park department budget, fewer complications will result and more detailed analyses of these businesses will be greatly facilitated. These activities can be operated very efficiently on a budget basis. The total receipts and the total expenditures of the business may vary greatly in total from the budget figures, but the resulting profit may not show so great a variation, and when this variation is transferred to the total receipts in the general park budget, its effect upon the totals of that budget is indeed very small. On the other hand, had the total receipts and expenditures of the business enterprise been carried in total in the general park budget, the variation in carrying out the budget would have been great indeed and the actual accomplishments would not be a measure of the efficiency of the manager; nor, in fact, would they answer the purpose of the general budget itself.

The general budget is compiled with the idea in mind that where taxes are augmented by the receipts from revenue-producing activities, it is the net receipts from those activities which result in a reduction in the amount necessary to be raised by taxation and not in the gross receipts of such revenue-producing activities. For if the gross receipts are used, then the gross expenditures must be allowed, and it is not the intention of the budget-making authorities to authorize the expenditure of more money than is actually taken in.

Summary of budget discussion. The purpose of the budget, it is observed, is to require the spending authorities to disclose to the public and to the official auditing and tax-reviewing bodies a distinct plan of operation for the ensuing year, and also to provide, by the making up of the budget, a basis of comparison at the close of the fiscal year for determining whether or not those plans were actually carried out, whether the funds were judiciously spent as authorized by the adoption of the budget and, in short, to measure in a way the efficiency of the department manager. The budget, although answering these purposes in a generally satisfactory manner, yet frequently is not sufficient for all managing purposes and consequently needs the aid of supplemental records which we will here call "financial records for management purposes."

3. Financial records for management purposes. In estimating the budget requirements for a park system, the expenditure figures are usually the result of consolidated estimates of expenditures on many different parks and park activities. In other words, the expenditures required for Audubon

Park are estimated and classified according to the codes above described and are combined with like estimates representing the requirements of Lincoln Park, Washington Park, etc. Now, in conscientiously carrying out this program of expenditure and in seeing from month to month that the plan is actually adhered to, especially in cases where a large system is involved, it is necessary to have the records which are compiled each month issued in exactly the same form as the budget. It is frequently required that these records be further detailed into the expenditures properly classified on each of the parks in the system. In many cases this may be sufficient for all management purposes, so far as the maintenance of the park system is concerned. However, it will be noted by a further reference and study of the code classification above referred to, that the carrying out of certain minor improvements or larger repairs may entail expenditures in several of the classifications mentioned. When this occurs, it may be necessary to go to the trouble of compiling expenditure records on an additional classification than the standard code classification.

For example, in making up the budget it has been estimated that $3,000 will be required for repairing a certain building. In carrying out this plan, various materials in various classes are purchased, both permanent and temporary labor is used, and in fact expenditures in half a dozen or more classifications may be made. These expenditures are combined with expenditures on various other repairs, probably to the same park, and the $3,000 item which was the basis of the estimate finds no one corresponding figure in the expenditure records. It would therefore be a great aid to the manager if a classification on the basis of functions performed were compiled in order to facilitate the close scrutiny which the manager requires for his purposes. The sample budget presented on page 587 shows such a reclassification in general terms.

Only experience will determine whether it is necessary in any one particular system to compile records on more than one classification basis, the size of the system and the amount of work performed often being the deciding factor in such determination. The purpose for which the record is sought determines how that classification shall be made up, and the concrete illustration given above is an example of a general principle which exists in the compilation of all financial records, that is, to compile financial records in the manner which will answer the purpose or purposes for which the records are kept. The principle itself is obvious, but practically it is often lost sight of in the detail of compiling the records themselves.

4. Financial records for the operation of business activities.

Profit and loss statement. Records required for the operation of a business enterprise, as any revenue-producing activity actually is, are varied both in quantity and nature in accordance with the amount and variety of business done. First and foremost in the operation of any business enterprise is the statement of revenue and expense, or profit and loss. In municipal businesses the balance sheet is of less importance, usually because the equipment and capital investment in the business itself is a part of the general park assets. In most instances, the amount of business done by any park department justifies no more than a fairly well detailed statement of revenue and expense. Even in some of the larger systems, a further detail of this statement is all that is required.

An example is given of such a statement for a public golf links, whose rather elaborate building is used for social functions, especially in the winter time. Succeeding pages of the statement detail and support the various figures shown on the page of the statement submitted on the following page.

Comparison of sales with value of merchandise dispensed. There is always a possibility of a loss of merchandise either because of natural shrinkage, breakage, spoilage or because of the fact that clerks give merchandise away without taking in money for it, or use the merchandise themselves. In order to reduce such leaks to practically nothing, it is quite essential that the sales be compared with the retail value of the merchandise dispensed.

The idea is comparatively simple. If the check-up is to be made once a month, an inventory of all merchandise is taken just before the beginning of business on the first day of the month. A record of all deliveries made during the month is kept and these deliveries are added to the first of the month inventory. After the close of business on the last day of the month and before the beginning of business on the first day of the succeeding month, another inventory is taken of all merchandise on hand. The difference between this inventory and the sum of the monthly deliveries and the first of the month inventory, gives the amount of merchandise which has been dispensed; the retail value of it should check exactly with the monthly sales.

Theoretically this is simple, but practically it is not quite so simple. With careful study and analysis, however, it can be worked out with complete success. Such definitely priced articles as cigars, bar candy, golf balls, bottled drinks present no problem, but such items as ice cream cones, sodas, mixed drinks and lunches require an analysis to determine how much of the bulk merchandise is used in the make-up of the items dispensed. A knowledge is required of how many slices of bread are in a loaf, how many scoops of ice cream in a gallon, in order to determine the retail value of a

STATEMENT OF REVENUE AND EXPENSE

at ..... Golf Links

As of May 31, 1927

	As of May 31, 1927	*As of May 31, 1926*	*May 1927*	*May 1926*
	Income			
Café and miscellaneous:				
Café	.....	$343.00	.....	.....
Party refreshments	$1,280.85	1,507.85	$195.60	$117.35
Hall rentals	780.00	1,011.00	180.00	251.00
Party checking	351.40	391.00	47.00	64.70
Toboggans, storage and lockers	206.00	345.50	.....	.....
Miscellaneous	4.00	.....	.....	.....
Candy, cigars and lunch	3,181.15	3,048.40	1,377.56	1,744.42
Total	$5,803.40	$6,646.75	$1,800.16	$2,177.47
Golf:				
Temporary lockers	30.50	67.75	22.25	55.25
Seasonal lockers	313.00	422.00	77.00	174.00
Club rentals	250.00	332.60	159.30	256.60
Playing fees[1]	5,219.80	6,516.75	3,359.00	4,797.25
Checking	48.50	.....	30.00	.....
Ladies' locker key deposits	.....	12.00	.....	4.00
Soap, towels and repairs	136.45	136.58	77.10	83.08
Total	$5,998.25	$7,487.68	$3,724.65	$5,370.18
Grand total income	$11,801.65	$14,134.43	$5,524.81	$7,547.65
	Expenditures			
General building	$4,381.81	$2,958.98	$918.74	$550.33
Refectory	4,331.86	4,256.39	1,285.67	1,179.03
Golf	590.90	821.72	401.02	520.57
Course maintenance	1,846.19	1,831.00	910.26	1,111.35
New equipment and improvement	544.85	263.06	.....	159.46
Total expenditures	$11,695.61	$10.131.15	$3,515.69	$3,520.74
Plus increase in encumbrance:				
General	165.00	179.00	65.00	.....
Refectory	399.00	605.00	33.00	8.63
Total expenditures and encumbrances	12,259.61	10,915.15	3,547.69	3,529.37
Less increase in inventory:				
General	119.00	.....	34.00	.....
Refectory	747.00	1,317.00	145.00	317.00
	$11,393.61	$9,598.15	$3,726.69	$3,212.37
Income less expense	$408.04	$4,536.28	$1,798.12	$4,335.28

[1] Rounds of golf played:

	Month	*Year*
1926	325 at 25 cents	611 at 25 cents
	11,790 at 40 cents	15,910 at 40 cents
1927	140 at 25 cents	196 at 25 cents
	8,310 at 40 cents	12,927 at 40 cents

loaf of bread or a gallon of ice cream purchased at wholesale. These difficulties are not insurmountable and should not deter any park department from keeping such records. Cases have been found where the leakage has been as great as twenty per cent of the gross sales, and before such a system as that outlined above was installed, an average of ten per cent was not infrequent. The installation of a check-up system should reduce such leakage to one per cent or less.

A monthly check-up on seasonal activities is not frequent enough if the season lasts only two or three months. In such cases, a weekly check-up should be made and where the operation of taking the inventory is simple, a daily check-up is not impractical.

Manager's daily reports. The manager of each revenue-producing station should be required to make out a daily report of the business transactions of the day. This report should show the amount of cash on hand at the beginning of the day, the day's sales classified into the various methods of taking in the cash which are at his disposal, such as cash registers and their readings, rolled tickets and their readings. These reports should be checked, extensions verified and results posted daily at the central office. Figures 7 and 8 are examples of such reports.

Cash audits. Quite frequently during the business season the cash at the various revenue-producing stations should be counted and compared with the daily reports so that it is a known fact that the cash which is reported actually exists at the station. These audits should be made by someone from the auditing department at times when the manager of the revenue-producing station is least expecting such an audit. Frequently an audit will disclose matters of poor financial management such as the indiscriminate loaning of money and other practices not conducive to good financial management.

Other records on business activities. Certain revenue-producing activities require and justify other detailed studies, such as comparison of sales with weather reports and with financial conditions; studies of past performances in order to project these experiences into the future and anticipate future business possibilities; in fact, all studies which might be applied to any of the usual retail businesses can likewise be applied to the retail business carried on by a park department.

5. Special fund accounting — construction records. As has been previously stated, special funds are created for special purposes and usually for the purpose either of acquiring new park areas or for carrying out some park improvement project. The expenditures from these funds are not in the nature of annual expenditures but rather of project expenditures and hence no annual budget is feasible. In its place there should be required

BOARD OF PARK COMMISSIONERS—Recreation Department

DAILY REPORT No. 95

GLENWOOD GOLF LINKS

July 14 192 1

Cash Balance from Previous Report							279	80
RECEIPTS								
Service	Serial No.		3.00	5.00	7.00			
Seasonal Lockers	Present		103	1	1			
	Previous		102	1	1			
	No. Sold		1	0	0		3	00
Temporary Lockers	Present							
	Previous							
	No. Sold	5					1	25
Lessons	Present	Previous key deposits				63.00		
	Previous	Deposits to-day				50		
	No. Sold	Not included in report				6350		
Rentals	Present							
	Previous							
	No. Sold	13					8	95
Golf Permits	Present	216	0.70	451	2	5656		
	Previous	215	619	Rct 1	2	5625		
	No. Sold		451 @ 40¢	450		31 @ 25¢	187	75
Towel & Soap	1564 - 1587 - 23 @ 5¢						1	15
Miscellaneous	29427 - 29439 - 17 @ 10¢						1	70
Repairs	6 clips						2	00
	TOTAL RECEIPTS						205	80
Cash Summary	TOTAL CASH						485	60
	Amount deposited with City Treas.						215	38
	Balance on hand this day						270	22

Not included in report $63.50

John Smith

Manager

FIGURE 7

BOARD OF PARK COMMISSIONERS
DAILY REFECTORY REPORT

At Mt. Refectory Report No. 57 Date June 1 1921

TICKETS SOLD

NUMBER	UNIT PRICE	AMOUNT	
12368	5c	618	40
2945	10c	294	50
	15c		
TOTALS		912	90

REGISTER READINGS

DEPARTMENT	PREVIOUS	PRESENT	SALES TODAY		REMARKS
Cafe	44975	62355	173	80	
Picnic			58	50	
Soda and Ice Cream			912	90	
Cigars	60055	68355	83	00	
Candy	111637	152437	108	00	
Souvenirs	61407	65737	43	30	
Parcel Checks			2	70	
Commissions	Balloons		26	15	

U. S. REVENUE TAX

Syrups Mfd .gals
Taffey Sales 1100 $ 110.00

CREDIT	AMOUNT	
Candy		
Cigars		
DEBIT SODA		

CASH SUMMARY

	AMOUNTS	
Sales for the day . .	1408	55
Balance on hand from Previous Day	261	90
Available Cash	1670	25
Amt. Dep. with City Treas.	1300	00
Balance on Hand this day	370	25

Cashier No.	5c	5c		10c	10c		15c
Present Number	1209115	1269035		241640			
Previous Number	1207958	1263215		240001			
Number Sold	1757	5820		1639			
Cashier No.	5c	5c		10c	10c		15c
Present Number	1254792			245307			
Previous Number	1250001			244001			
Number Sold	4791			1306			
Cashier No.	5c	5c		10c	10c		15c
Present Number							
Previous Number							
Number Sold							

WEATHER:
Morning Fair
Afternoon Fair
Evening

MEALS SERVED DEPARTMENT EMPLOYEES

Cafe	Picnic	Lunch	Soda	Cigars
Candy	**Souvenirs**	**General**	**Total**	**No. Employees**
				33

James Nelson Manager

FIGURE 8

an adopted estimate of the cost of carrying out the project enumerated in sufficient detail to permit visualizing the completed project fairly well. It is well for a park department to provide that all estimates be made out in much the same form so as to facilitate keeping of financial records.

The expenditures on practically all park improvement projects can be classified into the following headings:

1. Dredging and filling.
2. Park grading.
3. Road grading.
4. Road surfacing.
5. Curb and gutter.
6. Walks and steps.
7. Sewers and drains.
8. Water supply.
9. Bridges.
10. Buildings.
11. Walks and fences.
12. Miscellaneous park equipment.
13. Playground apparatus.
14. Plantings.
15. Seeding and sodding.
16. Sundry expenses.
17. Construction machinery charges.
18. Special items.
19. Engineering and contingencies.
20. General park office administration.

Page 597 is a sample of an engineer's estimate of the cost of a construction project.

The purpose of keeping financial records in this case is to ascertain the exact cost of the project, to see that the total cost does not exceed the appropriated funds and to provide the engineer with progress statements so as to control the costs both in detail and in sum total as the work progresses. It is therefore obvious that the financial records should be so kept that a comparison both in sum total and in detail with the engineer's estimate may be available at all times. Ordinary monthly statements of expenditure are sufficient for most purposes, although when the completion of one phase of the work or one detail of the work is close at hand more frequent statements on that particular part may be required.

The engineer must have, in order to compile his estimates, very authentic cost records. For his purpose it is therefore necessary to obtain even in more detail than his estimate, costs on various phases of the work. For example, he must be provided with the cost per square yard of the completed pavement and a statement as to how that unit cost is made up. Page 598 is an example of a completed cost report which has been compiled from the actual record of expenditures received from the auditing department.

Quite frequently the engineering department will make up these detailed cost reports from the records of the accounting department, and sometimes the engineer will keep his detailed costs independent from the accounting department by observation in the field. Cost records which are not thoroughly tied up with the actual expenditures as revealed by the accounting department are very apt to be unreliable because all costs are not included therein or because all the cost information has not been available to the engineer. A more reliable method is for the accounting department, if it is at all possible, to keep in sufficient detail all costs on the construction

project so as to allow for any compilation whatsoever which either the accounting department or the engineering department may wish to make at any time either during construction or after construction.

A TYPICAL NEIGHBORHOOD PARK

Grading:					
Fill	65,000 cubic yards	at	$0.50	$32,500.00	
Clay subgrade, 6 inches	6,000 cubic yards	at	.70	4,200.00	
Loam surface, 6 inches	6,000 cubic yards	at	1.20	7,200.00	
					$43,900.00
Walks:					
Park	2,240 square yards	at	1.35	$3,024.00	
Street	1,280 square yards	at	1.35	1,728.00	
					4,752.00
Curb and gutter:					
Standard 1-foot street curb	1,900 linear feet	at	.70	$1,330.00	1,330.00
Rails and fences:					
At building	200 linear feet	at	.30	60.00	
Horse shoe courts	340 linear feet	at	.30	102.00	162.00
Sewers and drains:					
Tennis courts, 10-inch sewer tile	400 linear feet	at	1.10	$440.00	
Skating rink to creek, 10-inch sewer tile	710 linear feet	at	1.10	781.00	
Building to cesspool or sewer, 12-inch sewer tile	110 linear feet	at	1.90	209.00	
Catch basins	11	at	50.00	550.00	
					1,980.00
Water supply					1,200.00
Building					17,000.00
Tennis courts:					
Ten, concrete	6,070 square yards	at	1.55	$9,408.50	
Backstops	1,280 linear feet	at	3.00	3,840.00	
					13,248.50
Wading pool (1):					
Curb	150 linear feet	at	1.10	$165.00	
Floor	142 square yards	at	1.50	213.00	378.00
Canvas-covered play court					350.00
Playground apparatus					3,000.00
Lighting equipment					3,000.00
Pergolas (2)	2	at	700.00		1,400.00
Plantings:					
Street trees	48	at	8.00	$384.00	
Park trees	40	at	20.00	800.00	
Shrubs	2,000 square yards	at	.75	1,500.00	
Seeding and rolling	8 acres	at	100.00	800.00	3,484.00
Total					$95,184.50
Plus 4% engineering and contingencies					3,807.38
Total estimated cost					$98,991.88

6. Plan of park accounting and books of account. Only the general plan and a very brief description of the books of account can be attempted here. How these books shall be kept is a matter of bookkeeping procedure which may be determined from standard works on that subject. Consequently no attempt will be made to describe the process or to enumerate the accounts necessary.

Figure 9

Of elemental importance in any park department, be it large or small, is the existence of a general journal and a general ledger. Briefly, the general journal is a chronological record of the financial transactions of all park activities. It contains a detailed entry of all appropriations and their purposes, all bills paid and money received, but may contain only a summarized entry of monthly expenditures for labor and similar items which are elsewhere kept more in detail. The important thing is that it contains an entry of each and every financial transaction affecting the activities of the park department — it is the authentic record. On page 600 is a sample page of the general journal of a comparatively large park system. The general ledger contains the same information as the general journal, except that the information is here ledgerized into various classifications, usually as to funds. In many of the small park departments these two books may be so designed as to answer all the purposes for which financial records will be required. Other park departments will find it necessary to compile more detailed information than that shown in the general ledger and consequently will have additional books of account known as subsidiary ledgers in which is subdivided into more detailed classifications the information found in the general ledger.

In systems which expend hundreds of thousands of dollars annually, very likely this information will not be sufficient and it will be necessary to supplement the subsidiary ledger with supporting ledgers, statements and compilations of various sorts. There will come a time in the department's history when the method of making the entries in these books will require considerable thought in order to determine the most economical method. The books of account in the larger park departments will obviously be varied, their relation one with the other will be quite complicated and known to perhaps not more than one or two in the organization. Frequently the relationship between certain of the books is so seldom referred to that it is often beclouded on account of infrequent usage. It is of great assistance to chart all the books of account in the office much in the same manner that an organization chart is compiled.

It will be noted that the receipts are charted on the left hand side of the chart and the expenditures on the right. At the bottom of the chart is shown the original sources of information. Next above it occur the first postings of that information in the books of account. This is not generally in the most usable form and consequently reports and compilations occur which are grouped in the third row from the bottom. All of this information has also been posted in the general ledger and the general journal which are indicated at the top, and the figures in these two books control and verify the figures in the "most usable form" group. A brief description of

each of the records is given in each of the rectangular enclosures; the lines between the various groups show which information is posted in each of the books of account. This particular chart is for a park department which uses a tabulating machine bookkeeping system together with several manually kept books of account.

7. Methods of accounting entry. Obviously, the smaller systems will use the ordinary pen and ink or manual method of making entries, but where the entries run into the many thousands and hundreds of thousands, various machine methods are carefully considered. Most bookkeeping machines on the market are designed more for business enterprises than for municipal accounting and do not always answer the purposes of municipal accounting. The ingenuity of the office manager will be taxed in applying the principles of such machines to carry out the work which he finds it necessary to do, but careful thought and analysis will enable him to apply the following general principles to his own work.

It will be seen from the foregoing discussions that, generally speaking, park department accounting is, aside from its historic requirements, one of continually breaking down the total cost into various degrees of detail in order to answer the different questions which may be asked. The budget of the department itself requires that records be not only kept in the detail shown on the budget, but time and again items must be broken up into

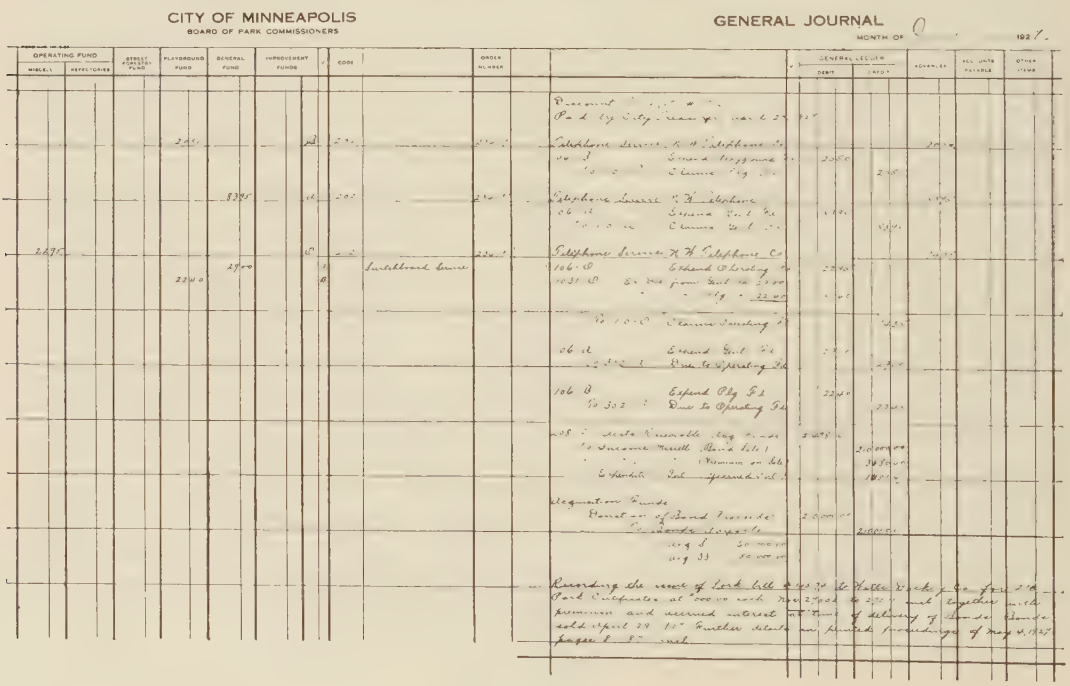


FIGURE 10

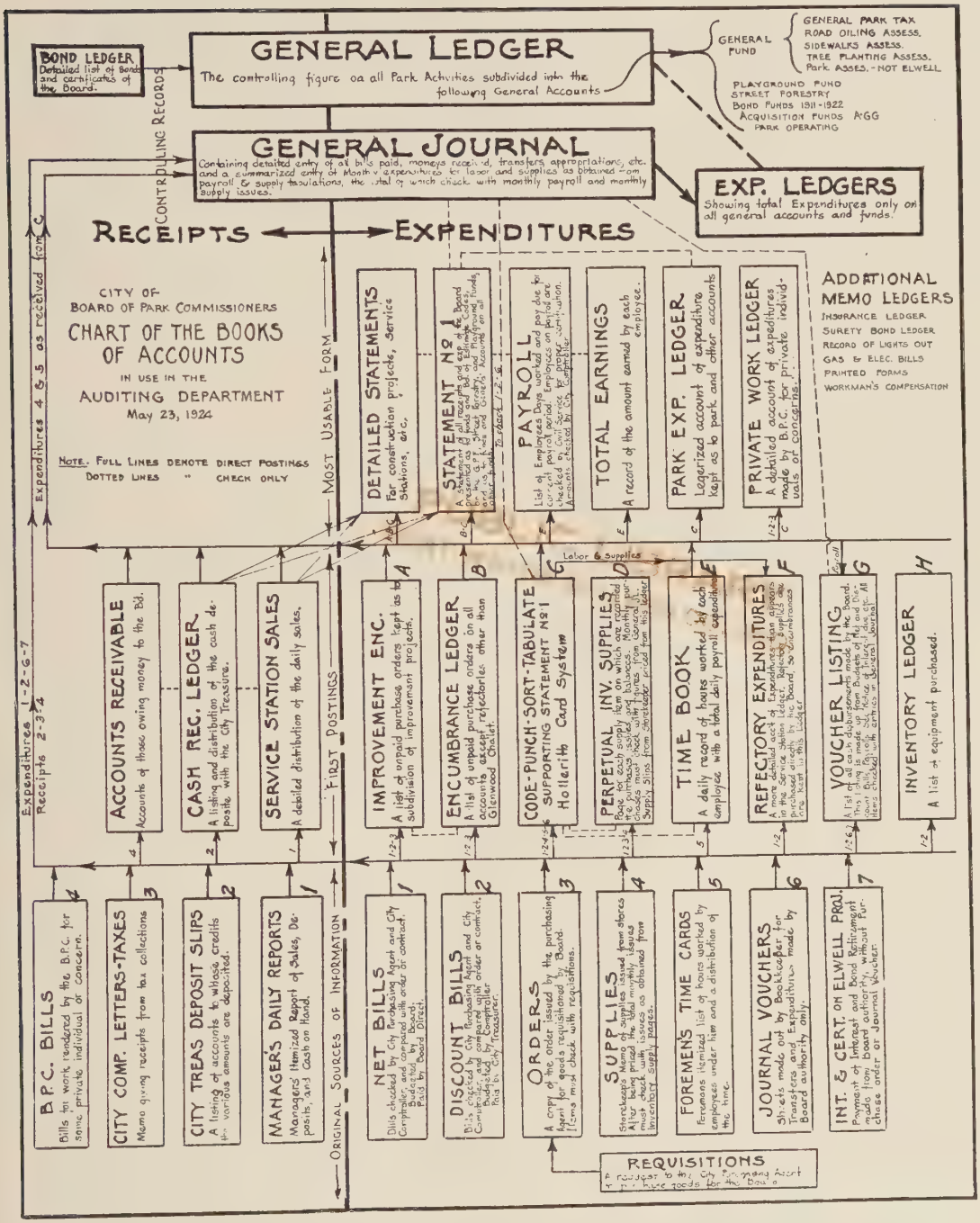

BOND LEDGER
Detailed list of bonds and certificates of the Board.
GENERAL LEDGER
The controlling figure on all Park Activities subdivided into the following General Accounts
GENERAL FUND
GENERAL PARK TAX
ROAD OILING ASSESS.
SIDEWALKS ASSESS.
TREE PLANTING ASSESS.
Park ASSES. - NOT ELWELL
PLAYGROUND FUND
STREET FORESTRY
BOND FUNDS 1911-1922
ACQUISITION FUNDS AGG
PARK OPERATING
CONTROLLING RECORDS
GENERAL JOURNAL
Containing detailed entry of all bills paid, moneys received, transfers appropriations, etc. and a summarized entry of Month's expenditures for labor and supplies as obtained from payroll & supply tabulations, the total of which check with monthly payroll and monthly supply issues.
EXP. LEDGERS
Showing total Expenditures only on all general accounts and funds.
RECEIPTS
EXPENDITURES
CITY OF
BOARD OF PARK COMMISSIONERS
CHART OF THE BOOKS OF ACCOUNTS
IN USE IN THE
AUDITING DEPARTMENT
May 23, 1924
NOTE. FULL LINES DENOTE DIRECT POSTINGS
DOTTED LINES " CHECK ONLY
MOST USABLE FORM
Expenditures 4 & 5 as received from C
DETAILED STATEMENTS
For construction projects, Service Stations, etc.
STATEMENT No 1
A summary of all receipts and exp. of the Board presented as of book end but of Estimate Codes, by the C.P.C. Bond Funds, Accounting on all Labor Books To date 1-2-3-6
PAYROLL
List of Employees Days worked and pay due for each period by Employees on payroll are checked by Civil Service for payroll certification. Amounts checked by City Comptroller
TOTAL EARNINGS
A record of the amount earned by each employee.
PARK EXP. LEDGER
Lagerized account of expenditure. Kept as to park and other accounts
PRIVATE WORK LEDGER
A detailed account of expenditures made by B.P.C. for private individuals or concerns.
ADDATIONAL MEMO LEDGERS
INSURANCE LEDGER
SURETY BOND LEDGER
RECORD OF LIGHTS OUT
GAS & ELEC. BILLS
PRINTED FORMS
WORKMAN'S COMPENSATION
Expenditures 1-2-6-7
Receipts 2-3-4
ACCOUNTS RECEIVABLE
Accounts of those owing money to the Bd.
CASH REC. LEDGER
A listing and distribution of the cash deposite with the City Treasure.
SERVICE STATION SALES
A detailed distribution of the daily sales.
IMPROVEMENT ENC.
A list of unpaid purchase orders kept as to subdivision of improvement projects.
ENCUMBRANCE LEDGER
A list of unpaid purchase orders on all accounts except reforestories other than Glenwood Chalet.
CODE-PUNCH-SORT-TABULATE
SUPPORTING STATEMENT No 1
Hollerith Card System
PERPETUAL INV. SUPPLIES
Page for each supply item on which are recorded the purchases, stocked and balances. Monthly purchases and issues are posted from Supply Slips from checked & priced from this ledger
TIME BOOK
A daily record of hours worked by each employee with a total daily payroll expenditure
REFECTORY EXPENDITURES
A more detailed acct of Expenditures than appears in the Service Station Ledger. Rejected Supplies as purchased direct by the Board to Encumbrances the Board in this Ledger
VOUCHER LISTING
A list of all cash disbursements made by the Board. This listing is made up from Budgets of Paid and Due Bills, Payroll Check Lists, Journal Vouchers. All items checked with each other before posting to General Ledger
INVENTORY LEDGER
A list of equipment purchased.
Labor & Supplies
FIRST POSTINGS
ORIGINAL SOURCES OF INFORMATION
B.P.C. BILLS
Bills for work rendered by the B.P.C. for some private individual or concern.
CITY COMP. LETTERS-TAXES
Memo giving receipts from tax collections
CITY TREAS DEPOSIT SLIPS
A listing of accounts to whose credits the various amounts are deposited.
MANAGER'S DAILY REPORTS
Managers Itemized Report of Sales, Deposits, and Cash on Hand.
NET BILLS
Bills checked by City Purchasing Agent and City Comptroller, and compared with order or contract. Paid by Board Direct.
DISCOUNT BILLS
Bills checked by City Purchasing Agent and City Comptroller, and compared with order or contract. Paid by City Treasurer.
ORDERS
A copy of the order issued by the purchasing Agent for goods requisitioned by Board. Items in check with requisitions.
SUPPLIES
Storekeepers Memo of supplies issued from stores After being priced the total monthly issues must check with issues as obtained from Inventory Supply pages.
FOREMENS TIME CARDS
Foremans itemized list of hours worked by employees under him and a distribution of the time.
JOURNAL VOUCHERS
Sheets made out by Bookkeeper for Transfers and Expenditures made by Board authority only.
INT. & CERT. ON ELWELL PROJ.
Payment of Interest and Bond Retirement made from Board Account on Journal Voucher
REQUISITIONS

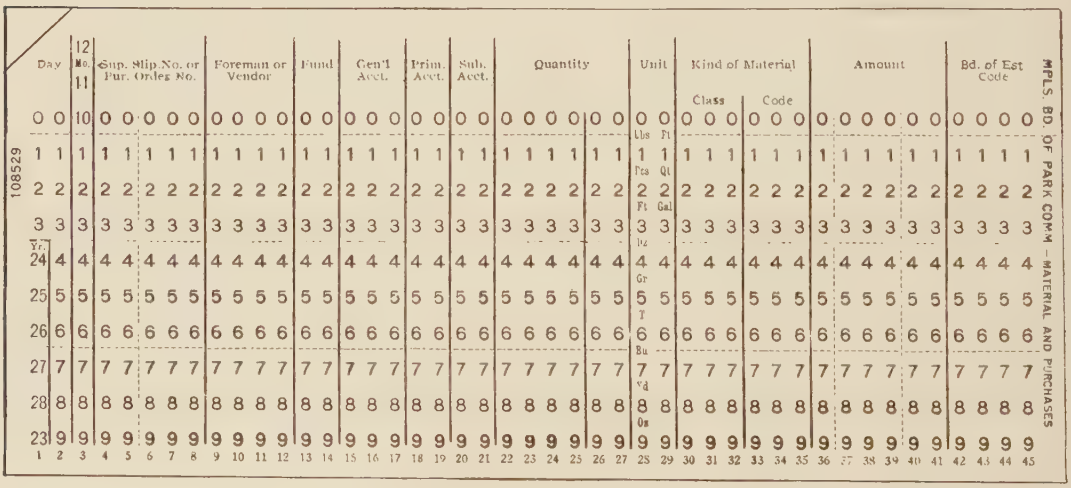
FIGURE 11

still more detailed compilations and in some cases even a third compilation is required.

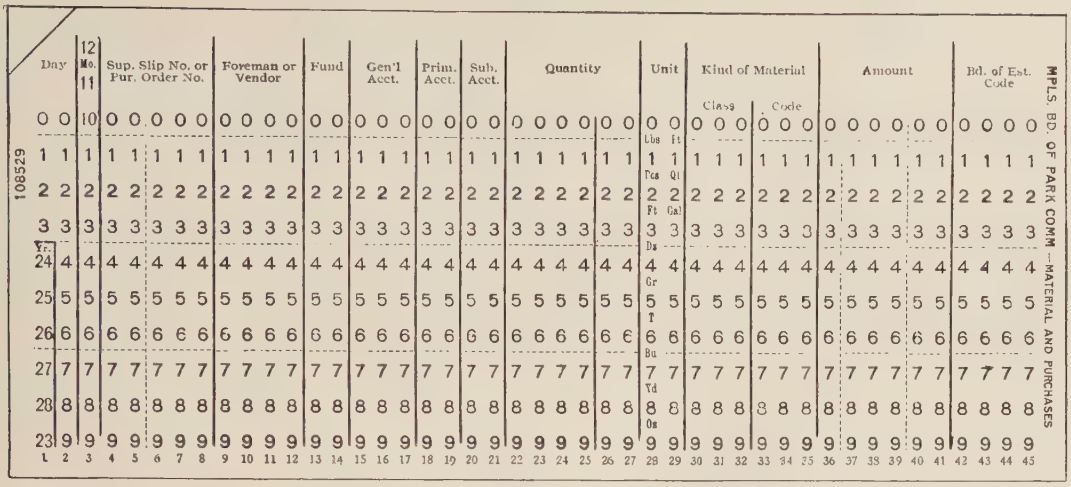
The accounting of business activities is likewise one of obtaining various compilations of the minutest detail of the business itself. Special fund accounting, especially where it pertains to construction, is in the same classification. As a matter of fact, for all park management purposes financial control is obtained by controlling the elements of receipts and expenditures which have to do with the cost of labor of the individual man, the cost of the individual items of supply and merchandise and equipment, and then, in order to get a "bird's-eye view" of the thing the manager wants these various costs collected, summarized and recapitulated.

(Form for Labor)

FORM FOR LABOR



FORM FOR INVOICES



FORM FOR STOREHOUSE SUPPLIES

Wherever the manual method of record keeping is employed, each time an additional degree of detail is required, an additional bookkeeping entry and an additional verification of totals is necessary. This means a continual duplication of entry. If machines can be obtained which will eliminate the duplication feature, their additional cost can soon be justified. Tabulating machines solve this problem of duplication, are in general more thorough than other machines, for here all the detail, the finest detail obtainable, is recorded on punched cards which can be tabulated and compiled into any sort of tabulation or compilation required. Hence the versatility of these machines is virtually one hundred per cent and generally speaking will answer the most difficult accounting question. Incidentally, their use on purely statistical information adds materially to their usefulness in a park department.

However, tabulating machines are not the only machines which will answer various degrees of bookkeeping procedure. Bookkeeping machines may be obtained for specialized forms of accounting as well as for general accounting purposes, and for the less complicated departments they may be more efficient in particular cases than the tabulating machines. In one park department where the tabulating machine method is being used, three forms of tabulating cards are necessary: one for all labor charges, one for all invoices and book transfers and one for all supplies issued from the park storehouse, these being the only three sources of expenditure which exist. They are here reproduced. (See pages 602 and 603.)

8. Complete code of accounts of a park department. As it is necessary to code all information which is punched on tabulating machine cards, this same park department has devised a system of codes of interest in showing

how the general information is by degrees broken up into its more detailed and usable forms by the use of funds, general accounts, primary accounts and sub-accounts. Incidentally these will give the names of classifications which will be found to be of interest to all park departments.

In this particular case the funds are each conceived to be broken up into what is known as general accounts. These accounts pertain to the individual parks and to overhead and general items. The general accounts are in turn broken up into primary accounts which add to the detailed functions of activity and items of expenditures. Where these are not of sufficient information or detail, sub-accounts are necessary. All of these accounts are independent of a separate classification, referring to the classifications under the general park budget.

Performance Records and Business Statistics.

1. *In general.* Cost is always an important factor in determining the degree to which records should be kept. No records should ever be kept which are not worth the cost of compiling and keeping them. However, quite frequently it happens that records which are of extreme importance in a large and general way are not kept because they are not of current interest and importance. In the business enterprises of a park department — and this is also true of any business enterprise — certain tendencies which are so gradual as to be unnoticed from season to season prove to be the making or the breaking of the enterprise itself. These tendencies are seldom charted but where they are charted their trend is guided by the hand of the manager. The records necessary for this charting process are ordinarily considered not important, and from day to day they are not important, but from year to year it is seen that they are quite essential. Of late years many business institutions have realized the desirability of such records and some of them have gone to the other extreme of fatally overdoing a good thing. The office manager must therefore pursue a very careful and sane course in these matters, having a very definite reason and a very definite purpose for each class of statistics kept. A few of these types of statistics are here discussed in not a very thorough or detailed manner but in a suggestive way which will open up the field to greater possibilities.

2. *Pertaining to financial records.* All statements submitted to the executive department heads should show comparative figures. Figures unaccompanied by any measuring stick are of little interest and of little information to either the busy executive or the general public. Operating costs, maintenance costs, etc., should be compared with the previous year's performances; construction costs, with costs of other city departments, local contractors' costs, and costs from other cities; revenue from taxes

should be compared with other city departments and similar departments from other cities. Comparison should always be made on a fair basis.

Financial records should be supplemented with records showing the unit quantities received from the money expended and various other records which will tend to show the efficiency with which the department is operating. City departments in general are accused of being operated in a most inefficient manner, and park departments should be ready and equipped at all times to show conclusively how efficient they really are. Incidentally, the keeping of these records may show what branches of the department can be operated in a better manner and may reveal possibilities for increased efficiency well worth the cost of keeping such records.

3. Showing the effect of parks on property values. Especially where parks are acquired by levying special assessments against benefited property, and consequently where the question of benefits is open to argument, it is well for the park department to be equipped with statistics showing the rise in real estate values which can be traceable to the establishment of parks. If possible, statistics should be compiled which will tend to show that parks maintain property values after they are once established in spite of the fluctuation of property values some little distance away from park areas. Such statistics are ordinarily left for rainy day compilation if thought of at all. They are worthy of greater consideration.

In one city where the acquisition and improvement of neighborhood parks was paid for by special assessment on the local benefited district, assessments had ranged from $125 a lot facing the neighborhood park to $10 a half mile distant. Four years after the levy was made and the park acquired and improved, it was found that the rise in real estate values of property immediately facing the park was about $400, while the rise in values of property a half mile away was of course immeasurable. This analysis, together with others all revealing the same relationship between assessments and rise in values, showed that assessments were not as equitable as they might have been, and consequently the policy was revised on future assessments. Similar experience on the assessment of parkways shows that properties immediately facing the park improved were not assessed as much in proportion to benefits received as those a little way from the park. This illustrates the importance of making these special investigations.

4. Recreation statistics. Statistics showing the effect of parks on the health and happiness of the citizens, and attendance records of all sorts should be available, but very great care should be exercised in determining methods of estimating these attendances and their significance. Records showing the number of people actually organized into various groups and all sorts of information concerning the type of people interested in various

activities should be maintained. In fact statistics which are generally compiled by social service organizations should be kept.

5. Statistics showing the effect on the morale, juvenile delinquency, etc. Coöperation of the park department and the local court authorities should be of such a nature as to facilitate the keeping of court records in a form which will be of use to the park department. This involves keeping the juvenile court records in such a form that the time when the delinquency occurred can be readily ascertained — both the time of day and the time of year — and also the type of delinquency itself, so that the effect of playgrounds on the morals of the youth of the community may be ascertained. Where actual measurable effect cannot be obtained, the statement of prison authorities and court officers and police records are of importance.

6. Summary. The whole purpose of these and similar statistics is to measure the use or the value of park areas to the people of the city. These records are the most intangible of all those kept by the department, yet they are the records which are quoted and referred to in determining any policy involving additional park areas and the enlargement of a park system. They tend to justify or not to justify the existence of the park department itself. They form the basis of propaganda work where propaganda work is justified at all. They are important.

Uniform Systems and Records.

1. Uniform accounting system. The opinion is often expressed that a uniform accounting system for all park departments would be a blessing to those compiling statistics of the various systems of the country. Since practically all park executives are making such comparisons continuously the significance of this statement at once becomes apparent. However, it seems hopeless and, in fact, it would be impractical to hope that a uniform accounting system should be adopted by all departments. Each has its own local problems to solve and each must keep its financial statistics in such a manner as to answer best the local questions which would be asked. There are, however, certain questions the answers to which are uniform and desired by all park executives, and no matter how the records are actually kept and what detail is gone through to arrive at the results, the answers to these questions should be available to all persons interested. The necessity for having these figures available is so obvious that it would be unnecessary to make special mention of it here were it not for the fact that these figures are not generally available.

Referring back to our discussion on funds, we recall that the first subdivision consisted of general or current expense funds and special funds. In those park departments having only a general appropriation for current

expenses and capital expenditures alike, accounts should be so kept as to make it possible readily to separate the two classes of expenditure. Facts concerning the current expense funds are the most sought after and the most interesting to park officials of other cities. Figures on special funds usually involve capital investments including acquisitions and improvements of parks and parkways and are of interest to other park officials only on certain occasions. The following items of a brief budget on the current expense funds should always be available.

STATEMENT OF INCOME AND EXPENSE ON CURRENT EXPENSE FUND

Income:

1. Balance at beginning of current year.
2. General taxes.
3. Special assessments (road oiling, sprinkling, sidewalks, etc.).
4. Operation of revenue producing activities (give only *net* income).
5. Miscellaneous (donations, court fines, etc.).

Total income.

Expenditures:

1. Direct cost of maintenance of parks, parkways and playgrounds.
2. Capital expenditures (if any).
3. Repair and replacement of equipment.
4. Playground instructors, supervisors and general playground office.
5. Administration and general park office.

Total expenditure.

Balance.

The items listed under income are all self-explanatory, but some of the items under expenditures probably call for a little more detailed explanation.

Item No. 1, although calling for direct cost, may or may not contain such general overhead items as police, music, etc. But should it not contain these items, then a separate item should be made in the list of expenditure items for police, music, etc.

Item No. 2 is not ordinarily included in current expense funds, but there are bound to be some minor improvements or new equipment purchases or land purchases which will be made out of the current expense fund, and the items are put in here so that they can be readily identified.

Item No. 3 is self-explanatory. It contains no expenditure for the purchase of new equipment other than that required for replacement purposes.

Item No. 4 is self-explanatory, and of course in such systems which do not operate a playground system this item will be missing.

Item No. 5 takes care of all overhead expenditures and items not listed previously.

No attempt will be made to suggest a uniform system of special fund expenditures since such figures do not ordinarily occur in budget form and are usually requested for specific purposes easily ascertainable.

2. Uniform park statistics. A comparison of statistics of the various park departments of the country is continuously in progress by one or more of the individual departments. Since these comparisons are likely to go on indefinitely, it is well for the various departments to have available answers to what might be termed a model or standard questionnaire here reproduced.

Questionnaire No. 1 is to be sent out to cities served by one park system:

1. *Identification.*
   (*a*) Name of city.
   (*b*) Name of county.
   (*c*) Name of state.
2. *Population of city.*
3. *City areas.*
   (*a*) Land area of city.
   (*b*) Water area of city.
   (*c*) Total area of city.
4. *Park areas.*
   (*a*) Land area of parks.
   (*b*) Water area of parks.
   (*c*) Total area of parks.
5. *Approximate percentage of park system developed.*
6. *City finances.*
   (*a*) Money raised by taxation for current expense of all city departments including parks.
   [1](*b*) Money raised from miscellaneous sources for current expense of all city departments including parks.
   (*c*) Total money raised for current expense of all city departments including parks.
7. *Park finances.*
   (*a*) Money raised by taxation for current expense of all parks.
   [1](*b*) Money raised from miscellaneous sources for current expense of all parks.
   (*c*) Total money raised for current expense of all parks.

Questionnaire No. 2 is to be sent out to districts served by county, metropolitan or district park systems.

1. *Identification.*
   (*a*) Name of the park system.
   (*b*) District served.
2. *Population of district served.*
3. *Area of district.*
   (*a*) Land area of district.
   (*b*) Water area of district.
   (*c*) Total area of district.
4. *Park areas.*
   (*a*) Land area of parks.
   (*b*) Water area of parks.
   (*c*) Total area of parks.
5. *Approximate per cent of total park area developed.*
6. *District finances.*
   (*a*) Money raised by taxation for current expense of all district purposes.
   [1](*b*) Money raised by miscellaneous revenue for current expense of all district purposes.
   (*c*) Total money available for current expense of all district purposes.
7. *Park finances.*
   (*a*) Money raised by taxation for current expense of parks.
   [1](*b*) Money raised by miscellaneous sources for current expense of parks.
   (*c*) Total money available for current expense of parks.
8. If your district included any municipality functioning independently from you and whose statistics are not included above, name it.

Questionnaire No. 1 is applicable to all park departments in the country except for those cities which are served by more than one park system or where the system consists of a county or a metropolitan system embracing more than one city. In such cases Questionnaire No. 2 is applicable.

A close study of the questionnaire will recall the simplicity and yet the thoroughness of it, and if used by all departments would result in much saving of time and energy. A brief discussion of data contained in the questionnaire might be of advantage.

Both questionnaires are asking for the name of the park system and the population served, so that the achievements of the various localities may be grouped inot those of similar size.

Next, the area of the city or district, the park areas and the approximate percentage of park area developed are called for. These show the rela-

[1] If miscellaneous revenue included receipts from the operation of revenue producing activities, include only the net receipts from such operation.

tive importance given to parks in that particular locality and provide some measure of the achievement of the locality itself so far as physical features of parks are concerned.

The next group of questions relates to the financial progress and asks for the amount of money raised by taxation and other sources. Both amounts, compared to the amount similarly raised by the locality itself, give us the relative importance from a monetary standpoint that parks enjoy in the public eye of that locality.

These are the major points of comparison between various park systems and if the information about them is always available it is possible for an interviewer to obtain a fairly comprehensive idea of the park department and the locality served which will produce a background for him to inquire into specific phases of the subject in which he is particularly interested.

It will be noticed that of the questions asked only one calls for a deduction on the part of the one answering the questionnaire; that is, the approximate percentage of the total park area developed. All others are simple facts, but from these simple facts may be made all sorts of comparisons and calculations as the following table will show:

City	*Area per 1,000 Population*	*Per Cent per Area in Parks*	*Cost per Developed Acre*	*Cost per Capita*	*Per Cent Tax for Parks*
Buffalo, N. Y.					
San Francisco, Calif.					
Milwaukee, Wis.					
Washington, D. C.					
Newark, N. J.					
Cincinnati, Ohio					
New Orleans, La.					
Minneapolis, Minn.					
Kansas City, Mo.					

None of the foregoing information is called for directly in the questionnaire, and yet it is some similar form which would most likely be ultimately used for comparison. These deductions should be made by the city using the information.

Annual reports. The ordinary annual report of a park department has but little significance to anyone who does not already know the park system intimately — both as to its size and character and to its past achievements. The ordinary annual report, however, is of great value to those — and only those — particularly interested in the work of the department. Realizing the latter fact only too well and the former fact but little, if at all, most park officials exchange reports religiously, amass a file of such

reports for reference purposes and refer to them but rarely except for interesting pictures and plans.

A much more effective distribution of information would be to limit the distribution of annual reports — which deal with the achievements of the park departments for the past fiscal year — to those particularly interested in that particular park system. For all others, a pamphlet giving information concerning the size, importance, special features, costs and achievements of the park system, would be much more interesting and instructive than mere annual reports. The distribution would naturally be much larger than that of annual reports.

Some park departments of the country are already issuing general descriptive pamphlets, some of them very beautifully illustrated and others very simply gotten out, giving only statistics and general information. Other departments are actually getting out two sets of booklets, one of them an illustrated booklet with but very brief descriptive matter containing over ninety per cent pictures, and the other containing no pictures but all descriptive and statistical matter. Regardless of whether one or two booklets in this class are issued, the information which is compiled is usually of the following classifications:

A brief history of the city. A brief history of the park and parkway system. A chart of the political organization of the park department. Statistical information which includes the number, size, value of parks as a whole and all sorts of interesting information as well as statistics on the various facilities in the parks such as playgrounds, athletic fields, skating rinks, craft on the lakes, water areas, shore lines, etc. Current expense budget. List of the capital investments made in the last five years. A chart or table comparing park taxes with city taxes. Description of the methods of financing capital investments. A complete list of parks and parkways with their acreage, the year they were acquired, the cost of the department and their location. A listing of historical parks and the incidents of history connected with them. A listing of the special points of interest. A list of the statues, tablets and memorials. A listing of the special recreational and entertainment features. An outline of one or more itineraries of the park system. A listing of the interesting views from various points of vantage. A few general city statistics and statistics on private enterprises which include the number of railway lines, miles of street car lines, number of factories, wholesale firms, and the value of their output, number of hospitals, churches, theatres, the bank clearings, etc.

Office libraries. It is probably well understood by park executives that a reasonable number of volumes on specialized subjects should be available to the employees for reference and for study. It is not often that a park

department has its own library, as these reference books are usually distributed among the offices of the people most interested in particular subjects. If a central library were possible, with a librarian in charge, conditions would be almost ideal, but few park departments can afford to go to that expense.

Probably just as useful and sometimes more useful than textbooks is the information which is gleaned from the reading of various magazines and newspaper articles by various divisional heads of park departments. It is seldom that this information is jotted down as it is read and it soon slips the minds of even the most alert. Were it possible for this information to be gathered together and properly indexed, a great deal of useful current information would be available at all times.

In a park department large enough for two or three sub-department heads, a very useful system can be worked out along the following lines: Each of the department heads who reads an article which he considers of material value, notes that article and gives reference to it to the file clerk. The file clerk issues a listing of these articles, once every two weeks or once a month, and the list is passed around to those interested in that department, giving them an opportunity to call for these articles and to read them. The result is that any article which one person reads which is of interest to others in that department is automatically referred to them in this manner. In the course of time a valuable collection of current ideas and opinions on park matters is obtained. It now becomes necessary to index the information. This the file clerk can do by devising a comparatively simple subject list, and we have then the foundation of an extremely valuable business library on park activities. If this matter is continually kept up to date and only the best of the articles retained, the value of the library increases tremendously.

This system might also be used by various employees who make trips out of town to other park departments. If they would simply jot down on memorandum cards little bits of information which they find of particular note and give these to the file clerk upon their return so that others may have the benefit of the observations, an additional usefulness becomes available. Better still than jotting down the information as one sees it, it should be made a practice in every park department that all of those who are sent away at the expense of the department to other cities should be required to make a complete report of their observations upon their return. This report becomes a part of the business library and of course carries comparatively more information than mere isolated memoranda.

Filing and indexing. Comment is here made upon the subject of filing and indexing, more to emphasize its importance than to describe particular

methods. In fact no attempt is here made to describe methods of filing and indexing because the best information that is available is found in current trade publications and manufacturers' catalogues, which go into the subject much more thoroughly and in a much more up-to-date manner than any general textbook on the subject.

An office manager cannot give too much consideration to, and lay too much stress upon the importance of filing and indexing. His filing department is his storehouse of information, and if the information is not readily available at all times it becomes useless. The file clerk in charge of the department is much more of an expert than most office managers give her credit for being. In fact, if she is not an expert and is not capable of devising a new method or improved method of filing and indexing, she is not fit for the job at hand. Too many filing departments are so designed and so operated that when the file clerk is away the filing system is of no use, and when the end of the year rolls around and the file clerk is incapacitated for one reason or another, then the office is in a "mess." In order to obviate these unpleasant situations, it is necessary for the office manager to have available the general layout of the filing department and certain information in regard to the type of information filed. All of these instructions can be put in an office manual, in fact, the following is quoted from an office manual:

"Filing and Indexing. There should at all times be available at the file clerk's desk and also at the chief clerk's desk, a chart or plan of the location of the various files in the vault. This chart will indicate the various files and the drawers in the files, labeled the same as the files themselves, as, for example: Paid Bills 1922; Original Notes on Board Proceedings 1917; Assessment Rolls and Plats; Pending Proceedings; Concert Programs.

A chart of the filing cases in the storehouse should also be kept by the file clerk and a copy for the chief clerk. The files in the storehouse should be in just as good shape as those in the general office, even though the cases may not be so convenient, may be older and out-of-date.

Unless printed, the guides and folders are to be neatly typed. No papers are to be left protruding from the folder and each file should at all times present a uniform and neat appearance. All papers and documents sent to the filing clerk for filing must be filed and indexed the same day. It is imperative that an 'out' system be maintained so that the location of any paper or document not in the files may be readily ascertained. It is the duty of the file clerk to read various trade publications and to file pamphlets so as to be always informed on the latest developments in this direction. The file clerk should be prepared to suggest improvements from time to time as the needs of the departments may require.

At the beginning of each year, the file clerk shall transfer from the cases in the vault to the cases in the storehouse one year's supply of all the papers that the accompanying schedule calls for transferring. Such papers

and documents, of which only one or two years' supply is kept, may be destroyed at the beginning of the second or third year, as the case may be.

All index cards shall either be typewritten or very legibly written in long hand."

CONTENTS OF FILING VAULT

Items	*Size of File*	*Number of Drawers*	*Number of Years to be Kept*	*Number of Years in Vault*	*How Filed*
Original notes on board proceedings	11½ x 17	10	All	10	Chron.
Truck operator's reports	11½ x 17	1	2	2	Truck
Miscellaneous papers on acquirements and improvement proceedings	11½ x 17	4	All	All	Chron.
Payrolls	5½ x 17	4	All	5	Chron.
Pending proceedings	11½ x 17	1	All	All	Chron.
Assessment rolls and plats	11½ x 17	3	All	10	Parks
Bond matters and miscellaneous assessment rolls	11½ x 17	1	All	10	Chron.
Committee books	11½ x 17	1	All	All	Alpha.
Contracts and fidelity bonds	11½ x 17	1	All	10	Chron.
Abstracts (one empty, one miscellaneous assessment rolls)	11½ x 17	6	All	All	Park
Certificate and interest coupons paid	11½ x 17	2	All	10	Chron.
Bound proceedings	7½ x 22	3	All	All	Chron.
Deposit slips	7½ x 22	1	2	2	Chron.
Annual reports	7½ x 22	2	All	All	Chron.
Concert programs	7½ x 22	1	All	10	Chron.
Proceedings printed	7½ x 22	5	All	10	Chron.
Paid bills	9½ x 22	44	All	5	Chron.
Park museum vouchers	9½ x 12	1	10	10	Chron.
Refectory orders	9½ x 12	1	2	2	Vendor
Improvement material orders	9½ x 12	1	2	2	Park
Work sheets	9½ x 12	1	All	All	Chron.
Storekeepers' supply slips	9½ x 12	1	2	2	Chron.
Miscellaneous covers, indexes, etc.	9½ x 12	1	..	..	.....
General correspondence	11½ x 14	1	5	5	Subj.
General correspondence	11½ x 17	4	5	5	Subj.
Assessment cards	5½ x 14	24	All	All	Parks
Workmen's compensation	11½ x 14	½	All	All	Alpha.
City comptroller's letters	11½ x 14	½	2	2	Chron.
Purchase orders	11½ x 14	2	2	2	Vendor
Requisitions	11½ x 14	1	2	2	Subj.
Daily reports	11½ x 14	2	2	2	Chron.
Improvement time cards	11½ x 14	2	2	2	Foremen
Pictures	11½ x 14	1	All	All	Subj.
Boat tickets	11½ x 14	1	1	1	.....
Indexes and mailing lists	5½ x 14	6	2	2	Alpha.
Extra copies old annual reports	11½ x 14	1	10	10	.....
Tourist camp register	11½ x 14	½	2	2	Chron.
Voucher listings	11½ x 14	½	10	10	Chron.
Cabinet:					
General ledgers and journals.					

Stock room. Any park department which uses an appreciable amount of office supplies should take care of them in such a manner as to reduce waste to a very minimum. All printed forms and office supplies should

be kept under lock and key and issued in just as efficient a manner as supplies and tools are issued from a storehouse. It will be found economical to purchase most printed forms, pencils, paper and other merchandise in fairly large quantities in order to get as low a price as possible. This necessitates keeping a considerable stock on hand, and it should not be assumed that this stock can be just piled up somewhere. Suitable shelves, preferably of steel construction, should be provided and labeled as to their contents, and the stock arranged neatly and in a logical order on them. The responsibility of keeping the stock in good shape should rest upon the shoulders of only one person, whose duty it should also be to keep record of all issues from stock.

In order to reduce the number of trips to the stock room and consequently the time taken in making those trips, it might be advisable to have one person delegated to inquire from the office employees each morning exactly what they will need from stock for that day's business. The stock can then be procured and delivered to the employees.

The stock room clerk can keep a perpetual inventory record of all printed forms and stock on hand with suitable memoranda indicating the time for reordering of the various stock. Besides reducing the quantities used to a minimum, the operation of such a stock room will also ensure having supplies and printed forms on hand when they are needed.

The balance sheet in park department accounting. The balance sheet, listing on one side the assets of the department and on the other side the liabilities, finds very little practical use in the operation and management of a park department. The office manager will obtain some little information from the experience gained in making one up occasionally, but practically it is seldom if ever used.

On the assets side will be listed, among other things, the value of land and improvements, and the net value of these items will be found on the other side of the ledger under liabilities, listed as surplus or capital investment. The difficulty in obtaining an intelligent figure on the value of park land and improvements has already been discussed. No matter what figures are used, it is simply an opinion and consequently the net worth of the park system will also be an opinion only.

Moreover, a park department is in a different position from a mercantile or industrial establishment and does not find the use for such a statement that business concerns do. As has been said, it is well to know the make-up of the balance sheet as far as the office manager is concerned, but its practical use is very small indeed.

Receipts and disbursements — revenue and expense. Confusion frequently exists in making up statements of receipts and disbursements and

revenue and expense. A statement of receipts and disbursements lists all moneys received as receipts and checks written as disbursements. A statement of this sort has little practical value as far as the operation of a park system is concerned. As has been previously stated in this chapter, it is an indication of the honesty of the disbursing official and provides means for financial check-up on his transactions, but so far as assisting in the management of a park system it is of very little help.

A statement of revenue and expense shows the sources of income (either received or to be received) and expenditures which mean obligations incurred, whether cash disbursements or orders encumbering cash, and will result in cash disbursements later on. Expense indicates amount of money which the department is under obligation to pay. Disbursements is money already paid. The two may or may not be the same.

A statement of revenue and expense gives the true status of the park transaction as it ultimately will be. It is the final result and, as a matter of fact, is the thing the park executive is interested in. This does not mean that statements of receipts and disbursements are to be dispensed with. Such statements show the status of the cash and must be available in order to account for it, but for management purposes the statement of revenue and expense tells the real story.

Method of obtaining monthly expenditures on revenue-producing activities. It is rather confusing in analyzing monthly statements of a business enterprise, such as refectories and golf links, to segregate the actual cost of doing business for any one month. The following explanation will clarify this difficulty.

Assume that we want to know the cost of goods sold in May in order to compare it with the income to obtain the net income. Obviously the goods sold in May is equal to what we had on hand May 1, plus what we purchased during May, less what is on hand May 31. This gives us equation (*A*) as follows:

(*A*) Cost of goods sold in May = May 1 inventory + May purchases − May 31 inventory.

But we do not conduct a "cash and carry" business, so our purchases in May do not equal our May payments. In May we pay for goods often delivered in April, and usually much of the goods delivered in May is not paid for until June. Our May purchases must equal our May payments less goods delivered in April, but not paid for, plus goods delivered in May, but not paid for until June. This gives us equation (*B*) as follows:

(*B*) May purchases = May payments − May 1 encumbrance + May 31 encumbrance.

Now substituting in equation (*A*) we have:

Cost of goods sold in May = [5/1 inventory + May payments − 5/1 encumbrance + 5/31 encumbrance] − inventory 5/31.

or

Cost of goods sold in May = May payments + [5/1 Inventory − 5/31 Inventory] − [5/1 Encumbrance] − 5/31 Encumbrance

= May payments [5/31 Inventory − 5/1 Inventory] + [5/31 Encumbrance − 5/1 Encumbrance]

In other words, correct the monthly payments by subtracting loss of inventory for the month and adding loss of encumbrance during the month to obtain the actual monthly expenditure.

Appendix.

1. Examples of Duties of Secretary as Defined in Typical Park Systems.

Birmingham, Alabama:

1. Custody of the corporate seal of the department.

2. Custody of the books and papers pertaining to the office.

3. Affix the corporate seal to all instruments requiring such action when authorized by resolution or vote of the board.

4. Attend all meetings of board and keep a full and complete record of its proceedings.

5. Keep accurate records and books of account.

6. Prepare annually a full and detailed report of the acts and doings of the board.

7. Prepare annually a complete itemized account of all receipts and disbursements of money.

8. Shall keep the original or true copies of all necessary accounts and vouchers subject at all times to the inspection of the members of the board.

9. Make a report to the board every month, or as often as desired by the board, showing the amount of money on hand, and the receipts and disbursements since the last report.

10. Shall receive and conduct the correspondence of the board.

11. Issue all official notices and prepare all papers and reports for the meetings of the board and for committees.

12. He shall be responsible for tools, implements and supplies held in store, and for the accuracy of the accounts of the storekeeper and the maintenance of inventories of supplies received and used.

13. Shall be held responsible for the economical purchase of all supplies and materials received and for satisfactory competition in all purchases.

14. Shall be his duty to see that no purchases are made on requisitions for materials, supplies, tools, implements, or other property, the cost of which will exceed one hundred dollars, without bids being taken thereon, the bids to be submitted to the board before contracts are awarded.

15. Shall be his duty to supply properly either from the storehouse or by purchase, any materials, tools, implements or supplies needed by the different park employees in their work. Purchases are to be made only on properly prepared requisitions authorized by the board.

16. It shall be his duty to examine the proposal received on advertisement for purchases, and to prepare comprehensive tabulated statements for purchases, and to give the board his recommendation as to the character and value of the work, material and implements offered in the proposal.

17. He shall perform the duties of purchasing agent, and in that capacity shall, subject to the action of the board, have charge of the purchase of all materials, tools, implements and supplies.

18. All calls for meetings of standing committees or special committees shall be issued by the secretary on request by the chairman of the committee.

19. The secretary shall give bond in the sum of not less than five thousand dollars, with surety to be approved by the board.

20. Shall give full time to the duties of the office.

South Park Commission, Chicago:

1. Shall have custody of corporate seal.

2. Custody of all books and papers pertaining to his office.

3. Shall attest and affix the corporate seal to all instruments requiring such action, when authorized by ordinance or vote of the board.

4. Shall cause all ordinances, resolutions and other actions of the commissioners requiring publication to be duly published.

5. Shall attend all meetings of the commissioners and keep a full and true account of their proceedings.

6. Shall have the management and control of the accounting department and in this capacity have charge of the system of accounting and all books of account.

7. He shall appoint according to law all assistants and employees in his department and shall prescribe their duties and supervise their work.

8. He shall give such bond for the faithful performance of his duties as the commissioners may from time to time require.

West Park Commission, Chicago:

1. Keep the corporate seal and affix the same to all papers which require it, and attest the same with his signature.

2. Keep all records and papers belonging to the commissioners.

3. Keep a full and accurate record of every proceeding in a journal for that purpose.

4. Record all ordinances, rules and resolutions passed by the commissioners in a book to be kept for that purpose, immediately after their passage and before the next regular meeting of the commissioners.

5. Cause due publication to be made of all ordinances or resolutions which require publication.

6. Prepare an estimate each year of the commissioners' probable requirements for the succeeding year, and present the same to the commissioners for their consideration and action thereon.

7. Purchase all supplies and equipment for the needs of the park where the amount to be expended does not exceed the sum of five hundred dollars; provided, however, requisition for the same has been previously approved by the president or his authorized agents.

8. Be held responsible for the economical purchase of all supplies and material, either made by himself or those authorized by him to do so, and for the obtaining of satisfactory competition in making all purchases.

9. Prepare for the commissioners proper and complete specifications and other necessary data required for bids or proposals for necessary work or supplies.

10. Perform such other duties as may be required of him by law or imposed upon him by any and all ordinances, orders and resolutions of the commissioners.

Los Angeles, California:

1. Secretary shall keep a full account of all property, money, receipts and expenditures.

2. Shall keep a record of all proceedings of the board.

Nashville, Tennessee:

1. Secretary shall keep accurate record and books of account.

2. Prepare annually a full and detailed report and statement of all the sets and doings of the board, together with a complete itemized account of all receipts and disbursements of money.

3. Shall prepare all papers and reports for the meetings of the board and for committees.

4. He shall draw all checks on the treasurer.

5. He shall receive and conduct the correspondence of the board.

6. He shall issue official notices.

7. Receive the reports of all employees and perform such other duties as the board may from time to time direct.

8. He shall preserve and keep record of all reports, maps, books or documents which may be purchased or presented to the board and shall exchange, in the name of the board, annual reports and public documents of the board with other public institutions, libraries, etc., in this and other countries.

CHAPTER X

THE PARK ENGINEERING DIVISION

Park engineering is concerned primarily with problems involved in the selection and construction of parks. Some of the problems involved in the selection and development of park properties have been discussed in Chapters II, III and IV; and the general functions of the engineering division of a park department have been touched on in Chapter VIII, page 517. Engineering problems involved in general lighting and sanitation have been discussed in the chapters devoted to those subjects respectively. The subject matter of the present chapter will be chiefly confined to a consideration of the organization and conduct of the engineering division of a park department.

Functions of Engineering Division

At the risk of repetition it is considered desirable at this point to give a *résumé* of the functions of an engineering division. William T. Lyle, in his excellent work on "Parks and Park Engineering," page 17 (published by John Wiley & Sons, Inc., New York, 1916), gives the following summary of the work of an engineering division of a park department:

(*a*) "Property surveys of lands to be acquired with the accompanying searches in the office of the recorder of deeds, and the preparation of property descriptions to be incorporated in deeds of conveyance prepared by the counsel or his assistants.

(*b*) Topographical surveys prepared for the use of the landscape architect in the preparation of his plans.

(*c*) Designs of sewer, drainage, water supply and lighting systems, together with the design of all essential engineering features of walls and bridges and roadways.

(*d*) The preparation, letting and supervision of all contracts for construction work. This includes the direction in detail of all construction operations.

(*e*) Planting and gardening operations.

(*f*) The maintenance of the work until it can be turned over to a superintendent's department, which need not be organized until the work is well under way or even completed.

(*g*) The policing of all acquired areas."

In this summary of the functions of the engineering division it is obvious that Mr. Lyle had in mind the functions of the engineering division or department in the preliminary stages or years of the development of a park system. This is the period or time when the engineering division

occupies a position of major importance and in fact is practically the entire executive department. During this period the chief engineer may actually have charge also of conducting negotiations for the acquisition of the properties desired for park purposes. And, in case it is necessary to resort to condemnation proceedings, the engineer must provide the attorney, the court and the appraisers with all the necessary technical data upon which the proceedings are conducted.

It is a very important function of the engineering division to keep careful, detailed accounts of each construction project. Mr. A. C. Godward, engineer of the Minneapolis Park Department, in an article on "Engineering in Park Development" (*Parks and Recreation*, Vol. VI, No. 1, September-October, 1922, pages 26–27), enumerates the following reasons for keeping careful accounts:

(*a*) "To guide the work of the field organization in such a way that the engineer and superintendent will know each day that all work is being carried out as to schedule; that work is being done economically and within the limits of the estimates; that quantities of materials being used are such as comply with the specifications. Only by true and up-to-the-minute accounts can the progress, efficiency and honesty of public work be maintained.

(*b*) To provide reliable data for the basis of future estimates.

(*c*) To furnish to the public a true and accurate account of all work performed and services rendered."

In the preparation and enforcing of contracts and in conducting litigations frequently arising out of construction work, the engineer must provide the attorney with the necessary technical information to enable him to prepare and conduct the case or cases intelligently and successfully. A great deal of such litigation may be avoided if the engineer is himself thoroughly familiar with the laws governing construction operations and endeavors to organize and conduct his work accordingly.

Relation of the Engineer to Other Technical Experts

Relation to the landscape architect. In the processes of selection and development of properties the activities of the engineer are in a measure subordinate to and under the general supervision of the landscape architect as the general planner of the system and the designer of individual properties and of special features in those properties. But at the outset the services of the engineer are indispensable to the architect in making boundary surveys and topographical and hydrographical surveys. The preparation of a map or maps embodying the data of these surveys is the work of the engineer. The preparation of a general plan map or maps showing the location of the different types of properties in the system, design maps and

plans of individual properties and drawings of special features, grading and planting plans, etc., are the work of the landscape architect. When the period of construction work arrives the preparation of engineering designs based upon the plans of the architect, the making of estimates, drafting of specifications, formulation of contracts, handling of bids, inspection of supplies and materials and general supervision of labor are functions of the engineer. If the work is done by day labor the engineer will be directly concerned with the purchase of supplies, materials, tools, machinery and employment as well as supervision of labor and the direction of all construction operations. However, in carrying out all grading and planting plans the engineer will work under the general supervision of the landscape architect.

Relation to the building architect. The landscape architect is responsible for the general designs of buildings, gateways, walls, steps and bridges, and in the case of some of these features he may be responsible for the detailed plans. But in the case of important buildings and possibly of other structures the detailed construction plans may be done by a building architect. In carrying out the actual construction operations the engineer will work under the general supervision of the building architect.

Relation to other specialists. Lighting and sanitation are special branches of engineering with which the park engineer may himself be sufficiently familiar, not only to carry out the construction work but also to prepare the necessary designs. But in case he is not sufficiently trained in these branches of engineering it may be necessary to call in specialists in these fields to prepare the original designs.

Methods of Handling Park Engineering in Different Communities in the United States

There are four methods of handling park engineering in the municipalities and counties of the United States. These may be enumerated as follows:

1. By the general executive when the executive is a technically trained engineer. A considerable number of park executives or superintendents are graduates of engineering schools or have had practical experience in civil engineering. In most of the departments where this is the case the superintendent, in addition to acting as chief executive of the entire department, acts as a chief engineer.

2. By calling in an outside engineer to serve temporarily for making surveys or to take charge of one or more construction projects. This method is comparatively rare.

3. By an engineer regularly employed by the park governing authority and having charge of an engineering division staffed with as many different

types of assistants as are deemed necessary. As a rule a regularly employed engineer and assistants are not found in the municipal and county park departments of the United States outside of the thirty or forty largest cities and a few of the most highly developed county park systems, and not all of these larger cities and counties maintain engineering divisions.

4. By the city or county engineer, as the case may be. This is by far the most common method of handling park engineering in municipalities and counties. This is especially true in city manager and commission governed cities and in practically all villages and small cities where parks are under the direct control of the city council. This method will in all probability continue to be the most common practice for the reason that since the services of an engineer will be needed only periodically the park engineering can be done more economically by utilizing the services of a municipal or county engineer who is usually permanently employed. Practically every county has a county engineer and the larger counties have highly developed engineering departments.

In a few instances in the larger cities and middle class cities one or more engineers are detailed from the city engineer's office to handle the park engineering work. Such details serve as permanent workers in the park department so long as necessary.

Organization of the Engineering Division

In those park departments maintaining a permanent engineering division the personnel usually consists of a chief engineer, one or more assistant engineers, instrument men, chainmen, rodmen, inspectors, foremen and laborers. In the preliminary development of a large system a chief gardener with assistants, a chief of police and patrolmen and other employees may be included in the organization personnel. For an example of a departmental organization that is primarily an engineering organization, see the organization chart of the Westchester County Park Department, Chapter VIII, page 525. The following are a few examples of the personnel organization of engineering divisions in systems maintaining permanent divisions (Statistics as of 1925–1926):

EXAMPLE 1. POPULATION OF CITY APPROXIMATELY 450,000
PARK AREA APPROXIMATELY 4,800 ACRES

Personnel	*Number*	*Rate of Pay*
Chief engineer	1	$275 per month
Draftsman	2	$154 to $170 per month
Instrument men	2	$154 to $170 per month
Rodmen	1	$4 to $5 per day
Inspectors	1	$125 to $150 per month
Laborers	46	$5 per day
Clerk	1	$170 per month

In addition, two rodmen, one inspector, 14 foremen and 179 laborers were employed on part time at the same rates of pay for the full time employees respectively.

EXAMPLE 2. POPULATION OF CITY APPROXIMATELY 800,000
AREA OF PARKS APPROXIMATELY 2,700 ACRES

Personnel	*Number*	*Rate of Pay*
Chief engineer	1	$3,000 to $3,200 per year
Assistant engineer	2	$2,100 to $2,300 per year
Draftsman	1	$1,800 per year
Draftsman and transit man	1	$1,700 to $1,800 per year
Transit men	1	$1,700 per year
	1	$2,000 per year
Rodmen	11	
Engineers in charge	15	$36 to $39 per week
Inspectors	1 chief	$2,000 per year
	2 assistants	$1,800 per year

EXAMPLE 3. POPULATION OF CITY APPROXIMATELY 800,000
PARK AREA APPROXIMATELY 3,000 ACRES

Personnel	*Number*	*Rate of Pay*
Superintendent of construction	1	$2,700 per year
Architect	1	$2,760 per year
Draftsman	1	$2,460 per year
Instrument men	2	each $1,680 per year
Head shop foreman	1	$2,280 per year
Automobile mechanics	2	$0.90 per hour
Blacksmith	1	$1.00 per hour
Blacksmith helper	2	$0.80 per hour
Carpenter foreman	1	$1.75 per year
Carpenters	5	$1.50 per year
Painter foreman	1	$1.42½ per hour
Painters	5	$1.30 per hour
Cement finisher foreman	1	$1.62½ per hour
Cement finisher	1	$1.50 per hour
Concreters	4	$0.87½ per hour
Foremen	4	each $1,800 per year
Laborers	59	$3.50 to $4.40 per day
Truck drivers	6	$130 per month

In this city the department is known as the construction department and obviously includes employees used in maintenance work.

EXAMPLE 4. POPULATION OF CITY APPROXIMATELY 900,000
PARK AREA APPROXIMATELY 2,500 ACRES

Personnel	*Number*	*Rate of Pay*
Engineer	1	$2,100 per year
Rodman	2	each $1,260 per year
Chainman	1	$821 per year

In this city the chief executive and his chief assistant are engineers.

EXAMPLE 5. POPULATION OF CITY APPROXIMATELY 350,000
PARK AREA APPROXIMATELY 2,570 ACRES

Personnel	*Number*	*Rate of Pay*
Engineer	1	$3,600 per year
Draftsman	1	$2,400 per year
Office draftsman	1	$1,500 per year
Rodmen	3	$1,200 to $1,800 per year
Inspectors	2	$1,200 to $1,800 per year
Foremen	1 chief	$2,272 per year
	1	$1,800 per year
Shop foreman	1	$1,872 per year
Storekeeper	1	$1,800 per year
Assistant storekeeper	1	$1,200 per year
Laborers	75	$3.50 to $4.80 per day

Obviously certain employees are carried in the engineering division who might properly be classified in the maintenance division.

EXAMPLE 6. POPULATION OF CITY APPROXIMATELY 375,000
PARK AREA APPROXIMATELY 3,240 ACRES

Personnel	*Number*	*Rate of Pay*
Engineer	1	$3,000 per year
Draftsman	3	1 at $3,000 per year
		2 at $1,960 per year, each
Instrument man	1	$1,960 per year
Inspectors	4	$5.30 per day

EXAMPLE 7. POPULATION OF CITY APPROXIMATELY 500,000
AREA OF PARKS APPROXIMATELY 3,500 ACRES

Personnel	*Number*	*Rate of Pay*
Engineers	5	$2,000 to $4,400 per year
Draftsmen	4	$2,100 average per year
Instrument men	4	$1,800 per year
Rodmen	4	$3.44 per day
Inspector	1	$2,100 per year
Foremen and laborers	6	$3.04 per day

Employed part time, 15 rodmen at $3.44 per day, and 15 laborers at $3.04 per day.

Records

Some of the records arising out of the engineering operations of a park department, aside from employment records, payrolls and other records common to the department as a whole, include (1) plans; (2) field books; (3) estimates; (4) cost records; (5) land plats; (6) engineering correspondence and catalogues. The usefulness of these records is greatly enhanced by a proper system of filing. This should be done in such a manner that any particular record can be found without loss of time. It is very desirable that filing receptacles for maps, plans, land plats and similar material be as nearly dust and soot proof as possible. The following is the method of

filing engineering records employed in one of the most highly organized park departments in this country:

"Tracings are filed in Beck Wall Files. Sizes from 8½ x 11 to 36 x 42 inches. Larger tracings are rolled and filed into pigeonholes. The plans have a colored card index, the color denoting whether they are tracings, negatives, prints or working drawings. Tracings are numbered thus: C-E-142; 'C' indicating the case, 'E' the envelope in the case and '142' the number of the tracing. One size tracings are numbered consecutively. Negatives bear the same number as the tracing but are placed in the envelope following and marked with exponent '2' as $C\text{-}E^{2}\text{-}142$. Likewise the prints, only they bear the exponent 3, as $C\text{-}E^{3}\text{-}142$. The working drawings are similarly marked and placed in envelopes near the back of the file.

Field records are kept in regular surveying books which are numbered. These are also recorded on a colored card index, the colors denoting land surveys; topography and soundings; bench marks; grading and sewers, walks and curbing.

Land record plats are drawn to such a scale that they can be put on a 20 x 30-inch sheet. These are numbered and put into a loose leaf book, which has an index on the fly leaf. These plats show the property lines with the distances, angles and curves. They are colored different shades of green according to the time they were acquired. Proposed acquisitions are shown in pink. A copy of the deeds to the property are put in a loose leaf book. The plans show the time of designation, awards, street vacations, when and what named, the play recorded, the survey made, the monument set and the area in acres. Also the number and page of the copy of the deed is recorded on the plan.

Estimates are filed in a regular vertical letter file under separate parks, as they are typed on regular 8½ x 11-inch paper. Cost data are kept in a loose leaf book separated according to class of work instead of different parks, like the plans and field books. One part of the book is set aside for pavements, under which there are two classifications, namely, base and surface. Likewise, colored cement work which is divided into walks, curbing and steps."

There are several different methods followed by engineers in park departments in filing maps, plans, etc. Among these are:

1. Large cabinet divided into pigeonholes of varying sizes into which the rolled records are placed without any protective covering. Such a case may or may not have doors. Unless the pigeonholes are deep enough to receive the full length of the drawings it would, of course, be impossible to use doors. Doors are very desirable, however, for the double purpose of keeping out dust and soot and preventing the records from being disturbed by unauthorized persons. A tag bearing the number of the record is fastened to the record in such a manner that it is always visible when the record is

in place, and in addition the number may be pasted on the partition wall of the pigeonhole either above or below.

2. A cabinet similar to the above with the drawings enclosed in cartons with metal tops, the number of the drawing or drawings being posted on the metal caps. This method is especially commendable because it ensures absolute cleanliness of the records.

3. A large case or cabinet having a number of shallow drawers into which the record may be filed flat. The chief advantage of this method is that the records are easily handled, being always unrolled. Unless, however, a very large case or several cases are provided, it is very difficult to segregate the records in such a manner as to facilitate the finding of a particular record. The number of each record is usually printed in prominent letters on the lower right-hand corner, and a list of the records in each drawer may be posted on the front of the drawer. For cross reference purposes each drawer may also be given a letter or a number. This method of filing does not protect the topmost record from becoming very dirty unless a sheet of paper or a cloth the size of the inside of the drawer is kept constantly on top therein.

4. A cabinet similar to the above is sometimes used except that the drawers are deeper and the records are rolled and placed in the drawers. This is the least desirable form of filing because of the difficulty of finding any particular record desired.

5. In park offices where the engineering records are not very numerous, an upright cabinet with a lid opening outward so that it can serve as a table is sometimes used. Inside are a number of clamps into which the records are fastened and suspended vertically in the cabinet. Each record bears a number, and an index of the records may be posted on the inside of the lid.

6. Another type of filing cabinet is sometimes used which from the outside has the appearance of a large drawer cabinet turned on end. Each one of the upright compartments is suspended on a roller bearing appliance which permits ease of movement outward and inward. On either side of each compartment is arranged a series of V-shaped receptacles into which the rolled records are placed. Each record bears a tag showing its number and on the outside of each compartment is an index of all the records in that particular compartment.

These various types of filing cabinets may be of metal or wood. While the steel cabinets would not preserve the records during an intense fire, they do ensure a measure of protection against fire not possessed by wood. In connection with any of the different methods of filing this type of record, a cross reference card index system is absolutely essential to keeping track of the records.

With respect to field notes, some park engineers use a loose leaf system of keeping such records. While this has some advantages over the ordinary bound surveying books, there is always danger of the leaves being misplaced or lost entirely.

Methods of Procedure in Handling Construction Work

The various steps in handling construction work in parks may include:

1. Decision by the park governing authority that it is desirable to undertake a given construction project or a series of projects.

2. The governing authority must know something of the probable cost or costs and calls on the engineer to make the necessary surveys, plans and estimates and a detailed report.

3. If the money is not available the governing authority must go before the proper municipal or county fiscal authorities, present the plans and the estimates and ask for the necessary appropriations or for the issuance of bonds. This may involve a public campaign of education and a popular election to vote on the issuance of bonds, or an appeal to the legislature for authority to conduct an election. If the project can be financed from current revenues the governing authority can, of course, proceed at once to the execution of the project.

4. When the money is available the governing authority must decide whether the park department will carry out the project by day labor through its own engineering division or by contract. Sometimes this decision is left to the engineer.

A great deal has been said and written as to the respective merits of performing park construction work by day labor or contracts. Certainly a small park system will find it more economical to use the contract method for the reason that it could not afford to assemble, organize and direct the necessary labor force and purchase the tools and equipment to carry out a project of any considerable size. Even a large system that is so far developed as to have only occasionally a large construction project will find it cheaper to resort to the contract method. It is only in the beginning of large systems, where there is a great deal of heavy construction work to be done which may extend over a period of several years, or in the extension of a system involving similar conditions, or in an exceedingly large system where construction problems of considerable importance are continually arising, that a department is warranted, economically, in building up a labor and supervisory force and investing in the necessary tools, equipment materials, supplies. On the other hand, in either small or large systems, construction work such as garden operations — smoothing topsoil, preparation for planting and planting — can usually be done more satisfactorily by day labor.

Where the volume of construction work is large enough to warrant a park department's equipping itself to carry on construction projects by day labor, a fundamental requisite of success is absolute freedom to select and discharge its employees at will. Political influence which causes the employment and retention of inefficient men is sure to cause the loss of all the gains that a department might make over the contract system in quality of work and in saving the profit of the contractor. A few park departments maintain a construction division or department which takes under its jurisdiction all minor construction work which ordinarily would fall under the jurisdiction of a maintenance division. This method enables the holding together of at least the skeleton of a construction organization which can easily be augmented when large projects arise. While many park departments favor the day labor system of performing park engineering projects, on the whole, any form of park engineering which requires a large labor force and the use of elaborate equipment can best be done under the contract method.

5. When a park governing authority has decided on the contract method the contract may be let either under the lump-sum system or the unit system. Under the former system one bid only is asked for the entire project and the contract is let to a single contractor. Under this system the estimates must be very exact and the amount of work to be done should be fully and accurately known beforehand. Definiteness in such cases forestalls the possibility of difficulty with the contractor over extras. This is a desirable system of handling a project if the project is comparatively simple in its elements and does not involve construction features requiring different kinds of technical skills.

Under the unit system the project is divided into units; for example, in the case of the construction of a building bids might be asked for general construction, heating and ventilating, plumbing, electrical work, or in the case of the development of a given area of ground bids may be asked for grading, excavations, sewers, cast iron, roadways, etc., or in the case of the construction of a group of park buildings bids may be asked for general construction, electric wiring and lighting fixtures, plumbing, sewers, water supply and gas fitting, marble work and terrazzo floors, roofing and sheet metal work, steam heating installation and equipment, and heat insulating. Under this system an individual bid is asked for each element of the project. This system is more elastic than the lump-sum system and it is not so absolutely necessary for the engineer to be as accurate and complete in his estimates beforehand.

6. *Advertisement.* When the park governing authority is ready to ask bids for a given piece of construction work an advertisement is inserted

in the official city paper, if there is one, in one or more of the daily or weekly papers and sometimes in technical journals. This is usually done from ten days to two weeks before the time for the submission of bids. We give an example of such an advertisement used by the Board of Park Commissioners of the South Park District, Chicago, in connection with the construction of certain bridges.

COPY OF ADVERTISEMENT
BY
SOUTH PARK COMMISSIONERS
FOR
SEALED PROPOSALS FOR FOUNDATION WORK AND STRUCTURAL STEEL WORK FOR THE BRIDGES NORTH OF TWELFTH STREET, CHICAGO

Sealed proposals will be received by the South Park Commissioners, 57th Street and Cottage Grove Avenue, Chicago, Illinois, until 12.00 noon, September 2, 1925, for doing all the work, to sink caissons, drive piles, construct the abutments for six bridges, furnish and erect the structural steel for two bridges and furnish and erect sub-columns and bearing boxes for four bridges, all to be constructed over the Illinois Central Railroad at Jackson Street, Van Buren Street, Congress Street, Harrison Street and Seventh Street, Chicago, Illinois, in accordance with the drawings and specifications entitled "Bridges North of Twelfth Street," prepared by the South Park Commissioners. Copies of these specifications, including bidding sheets and plans, may be obtained at the office of the South Park Commissioners, 57th Street and Cottage Grove Avenue.

No separate bids will be received on any of this work, the instructions being to award the whole work to one contractor. Only bids from those of record in the office of the South Park Commissioners as having received specifications will be considered.

Two copies of specifications and one set of plans will be furnished to each prospective bidder upon application and the deposit of $50, which deposit will be refunded upon return of plans in an unmutilated and serviceable condition. Bidding blanks to be used will be found in specifications. Facilities will be provided for preliminary examination of plans by bidders who may not desire to remove the plans from the office.

A deposit to the amount of five per cent (5%) of the aggregate amount of the highest proposal named in the submitted bid, either in currency or certified check payable to the South Park Commissioners, must accompany proposals as a guarantee of the good faith of bidder.

The successful bidder will be required to enter into a contract and give a surety bond of twenty-five per cent (25%) of amount of contract.

All proposals must be placed in a sealed envelope, plainly marked as stated below, which envelope will be delivered to the secretary of the South Park Commissioners, 57th Street and Cottage Grove Avenue, before the time limit stated above.

The envelope shall be marked as follows:

"Proposal for construction of bridges north of Twelfth Street."

The South Park Commissioners reserve the right to reject any or all proposals.

E. J. Whitty, *Secretary*,
South Park Commissioners.

August 2, 1925.

The essential elements of this advertisement may be enumerated as follows: (*a*) Statement as to time and place of receiving proposals, nature of the work to be done and where prospective bidders can secure copies of the specifications. (*b*) Conditions under which bidders may be allowed possession of copies of the specifications and plans or the use of the plans. (*c*) Conditions under which proposals may be submitted. (*d*) Responsibility of the successful bidder. (*e*) Instructions as to how the proposals shall be submitted. (*f*) Reservation by the park governing authority of the right to reject any or all bids.

7. *The proposal.* After the contractor has carefully examined the specifications, plans and the conditions under which the contract is to be executed, perhaps including also a personal examination of the site where the work is to be done, he prepares on a form provided by the park authority a proposal embodying a statement of the amount or amounts of money for which he will perform the work, accepting the conditions imposed by the park governing authority and binding himself, if his bid is accepted, to enter into a contract for the faithful performance of the work. The proposal is generally accompanied by a surety bond approved either by the attorney of the park governing authority or by the city attorney. On the opposite page is a form of proposal used by the Board of Park Commissioners of Milwaukee.

8. *Consideration of bids and awarding of contract.* On the day set for receiving or opening the bids the park authority, generally and preferably

To the BOARD OF PARK COMMISSIONERS,
of the City of Milwaukee.

Milwaukee, Wis., _____

I, the subscriber, do hereby propose to furnish all material and do the work according to plans and specifications on file in the office of the Board of Park Commissioners, of

.....

.....

.....

.....

.....

agreeably to the terms of your advertisement inviting proposals for such work, and pledge myself to enter into a written contract with THE CITY OF MILWAUKEE, with satisfactory sureties for the performance of the same.

(Name) .....

(Address) .....

DIRECTIONS TO BIDDERS

Bids must be put in separate sealed envelope, which, together with the bond must be put in a second envelope, directed to the Board of Park Commissioners, and endorsed with the name of Bidder and nature of work.

Bond must be approved by the City Attorney BEFORE placing same in the envelope.

All bids to be accompanied with a bond to the City of Milwaukee, in such penal sum as may be stated in the advertisement of the particular work to be bid on, and which bond must be signed by the bidder and two or more sureties, which sureties must each make an affidavit that he is worth the penal sum of the bond over and above all his debts and liabilities, in property in the City of Milwaukee, subject to execution. This affidavit may be made before any officer qualified to administer oaths.

Surety Company bonds will also be accepted.

No bids will be received after the hour advertised—and no bids can be withdrawn, changed or amended after that hour.

in open session, causes the bids to be opened and read by the secretary. The usual rule is to accept the lowest bid or bids if the bidder is a responsible contractor. The park authority, however, always reserves the right to reject any or all bids. The rejection of the lowest bid may be caused by the belief of the park authority that the lowest bidder is not qualified to carry out the work successfully or the bid may be greatly in excess of the lowest estimate of the park engineer. If the rejection is caused by the belief that the lowest bidder cannot successfully perform the work the contract may be awarded to the next lowest bidder, etc. Usually the contract is awarded the same day the bids are considered, although final decision may be deferred several days in order to give the park authority time to investigate the standing of the lowest bidder, if this standing is not fully known, or to give time to make additional estimates.

9. *The agreement or contract.* After a bid has been accepted the successful bidder is required within a specified time, usually ten days, to enter

into a formal contract with the park governing authority and often with the city or county as a third party. This contract embodies the bid or bids, the general conditions under which the work is to be conducted and includes all plans and specifications proper, together with acceptable individual or surety bonds provided by the contractor for the faithful performance of his duties and responsibilities under the agreement. Sometimes a maintenance bond is required in addition, binding the contractor to make good any deficiencies that may appear in his work for a given number of years, ranging usually from one to three years. Contracts are usually drawn in conformity with state laws regulating the letting of contracts for public work in municipalities or counties as the case may be.

The following is an example of the form of agreement used by the Board of Park Commissioners of Milwaukee:

ARTICLES OF AGREEMENT, made this..... day of .....
in the year ....., by and between .....
of the City of Milwaukee, part of the first part: .....
and .....
party or parties of the second part; and the City of Milwaukee, party of the third part.

Whereas, the said party of the first part has made a proposal in writing to the Board of Park Commissioners of the City of Milwaukee, to furnish the materials and do the work hereinafter mentioned for the said City of Milwaukee, for the price and within the time hereinafter mentioned, and according to the plans and specifications thereof on file in the office of the said Board of Park Commissioners, and the said Board has awarded the said work to the said party of the first part according to law;

Now, therefore, the said party of the first part, for and in consideration of the payments hereinafter provided, for himself, his heirs, executors and administrators, or for itself, its successors and assigns, as the case may be, hereby covenants and agrees to and with the said City of Milwaukee, to well and truly execute and perform the said work and furnish the said material under the superintendence of the said Board of Park Commissioners, for the said price, and within the said time, and according to the said plans and specifications, that is to say: .....
.....
.....
.....

And the said party of the first part hereby further covenants and agrees to and with the said City of Milwaukee to complete the said work in manner and form aforesaid on or before the time above specified.

And it is hereby mutually agreed between the said parties hereto, that the said Board of Park Commissioners shall have the right and power, and the same is hereby reserved to said Board, to adjust and determine finally all questions:

First, as to the proper performance of these presents and the doing of the said work by the said party of the first part, and in case of the improper or imperfect performance thereof, to suspend the said work at any time, or to order the entire reconstruction of the same, if improperly done, or to relet the same to some other competent party, and in case the said work shall not be prosecuted with such diligence and with such number of men as to ensure its completion within the time limited by these presents, to suspend the said work and relet the same to some other competent party, or employ men and secure material for the completion of the same, and charge the cost thereof to the party of the first part; and

Second, as to the amount earned under these presents by the party of the first part according to the true intent and meaning thereof.

And it is further mutually agreed, that any and every such adjustment and determination by the said Board of Park Commissioners shall be final and conclusive between the said parties to these presents, and binding upon them. And that if, upon any such adjustment or determination by the said Board of Park Commissioners, the damages to be paid to the said city according thereto, should exceed the amount due from the said city to the said party of the first part according thereto, then and in that case the said parties of the first and second parts, for themselves, and for their heirs, executors and administrators, or successors and assigns, as the case

may be, hereby jointly and severally covenant and agree to pay the same to the said City of Milwaukee on demand.

And it is further mutually agreed between the said parties hereto, that in case the said party of the first part shall, in the performance of this contract, dig up, use or occupy any street, alley, highway or public grounds of said city, the said party of the first part will, during the night time, put up and maintain such barriers and lights as will effectually prevent the happening of any accident in consequence of such digging up, use or occupancy of said street, alley, highway or other public grounds, for which the city might be liable, and the said parties of the first and second parts, for themselves and for their heirs, executors and administrators, or successors and assigns, as the case may be, hereby jointly and severally covenant and agree, that they shall, and they do hereby assume the liability for, and will pay on demand, any and all damages occasioned by the digging up, use or occupancy of said street, alley, highway or public grounds by the party of the first part, or which may result therefrom, or which may result from the carelessness of said party of the first part, or the agents, employees or workmen of said party of the first part.

And it is further mutually agreed that, in case the said party of the first part shall proceed properly to perform and complete this contract, the Board of Park Commissioners may, in its discretion, from time to time as the work progresses, grant to the party of the first part an estimate of the amount already earned — reserving fifteen per cent thereon — which shall entitle the holder thereof to receive the amount due thereon, when the amount applicable to the payment of such work shall have been collected, and the condition, if any, annexed to such estimate shall have been complied with. The granting of any such estimate shall not be construed as an acceptance of the work or any portion thereof.

And the said City of Milwaukee, in consideration of the covenants of the parties of the first and second parts herein contained, hereby covenants and agrees, that upon the completion of said work by the said party of the first part, pursuant to the terms of this contract, and according to the plans and specifications of said work on file in the office of the said Board of Park Commissioners, and the true intent and meaning of this contract, and after the acceptance of said work by the said Board of Park Commissioners, the said city will pay to the said party of the first part any balance then remaining due and payable by the terms of this contract for said work, when the amount applicable to the payment of said work shall have been collected.

And the said party of the first part hereby agrees to pay all claims for work and labor performed and materials furnished under this contract.

And the parties of the first and second parts hereby agree that default, neglect or delay of other contractors, or the extension of time by the City of Milwaukee for the completion of work by any other contractors, shall not render the City of Milwaukee liable to said parties of the first and second parts in any manner or sum whatsoever; that no assignment, subletting, alteration, or modification of this contract, or change in the work covered thereby, nor any extension of time for the completion of the work of this contract, nor any default, neglect or delay of any other contractors upon the same public improvement, nor the extension of the time to such other contractors for the completion of the work by such other contractors, shall in any way release the principal, surety or sureties, their heirs, executors, administrators, successors or assigns from full liability under this contract, notice of any such alteration, modification or assignment, the subletting or extension of time on this contract, or the default, neglect, delay or extension of time on any other contract, being hereby expressly waived by the contractor and surety or sureties herein.

And it is hereby mutually agreed that the said party of the first part shall not assign this contract, or any interest therein, nor sublet the said work, or any part thereof, without the consent in writing of the said Board of Park Commissioners first obtained; and that if the said party of the first part shall so assign or sublet, without such consent, then the said Board of Park Commissioners shall have the right, in its discretion, to rescind this contract and to declare the same null and void, or to relet the said work to some other competent party; thereupon adjusting and determining the damages to the said city arising thereby; and the said party of the first part shall be liable to the said city for such damages as the said Board of Park Commissioners shall so adjust and determine, which adjustment and determination thereof shall be final and conclusive on the parties hereto.

And the said party or parties of the second part, in consideration of the letting of this contract to said party of the first part, for itself, its successors and assigns, or for themselves, their heirs, executors and administrators, as the case may be, hereby guarantee and covenant and agree to and with the said City of Milwaukee, that the said party of the first part shall and will well and truly execute and perform this contract under the superintendence and to the satisfaction of said Board of Park Commissioners, and that the said party or parties of the second part will well and truly pay on demand to the said City of Milwaukee, any and all damages, and sums of money, which the said party of the first part shall be liable to pay to the said city under this contract or any clause or agreement therein.

And the said parties of the first and second parts, in consideration of the premises, for themselves, and for their heirs, executors and administrators, or successors and assigns, as the case may be, further covenant and

agree, that they will well and truly save and indemnify and keep harmless, the said City of Milwaukee, against all liability, judgments, costs and expenses, which may in any wise come against said city in consequence of the granting of this contract to the said party of the first part, or which may in any wise result from the carelessness or neglect of the said party of the first part, or the agents, employees or workmen of said party of the first part, in any respect whatever, and in every such case where judgment is recovered against the city by reason of the carelessness or negligence of such person, persons, firm or corporation so contracting, or his, their or its agents, employees or workmen, and when due notice has been given of the pendency of such suit, such judgment shall be conclusive against such person, persons, firm or corporation, and his, or their, or its sureties on such bond, not only as to the amount of damages, but as to their liability to said city, and that in case the said party of the first part shall fail to fully and completely perform this contract within the time herein limited for the performance thereof, they shall and will pay to the said City of Milwaukee, as liquidated damages for such default, the sum of.....
dollars per day for each and every day's delay in completing said contract, after the expiration of the time herein limited for its completion.

The Board of Park Commissioners may extend the time for the performance of this contract without the consent of the surety or sureties herein.

This contract is, by consent of all parties hereto, made expressly subject to all the provisions of Chapter 261 of the laws passed at the session of the legislature of Wisconsin in the year 1882, entitled "An Act to Amend Chapter 332 of the Laws of 1878, entitled an Act to Protect Laborers and Material Men in the City of Milwaukee."

And it is hereby agreed and declared that this contract is made expressly subject to the powers given to said Board of Park Commissioners by Chapter 179 of the laws of the State of Wisconsin of the year 1891, and all subsequent amendments thereto.

The party of the first part hereby agreed to pay all claims for work and labor performed, and materials furnished for, or in, or about or under this contract, and to comply and be subject to the ordinances of the City of Milwaukee and all subsequent amendments thereto and to ordinances and resolutions relating to a prevailing minimum wage scale and hours of labor of laborers and skilled laborers employed by contractors and sub-contractors on all public work.

The contractor and sureties hereby further agree for themselves, their heirs, executors, administrators, successors, or assigns, as the case may be, to procure and maintain at their own expense, insurance insuring against all liability under the Workmen's Compensation Law of Wisconsin and to comply with all the terms and provisions of said law, and also to indemnify and save harmless the City of Milwaukee against any and all costs, expense or liability of any kind that may be incurred by said city because of any injuries or occupational disease sustained by any employee or employees of the contractor.

IN WITNESS WHEREOF, the said parties of the first and second parts hereunto set their hands and seals, and the said City of Milwaukee has caused these presents to be subscribed by the said Board of Park Commissioners, the day and the year first above written, and countersigned by the Comptroller of said city.

Sealed and delivered in presence of } .....[SEAL]
.....[SEAL]
.....[SEAL]
.....[SEAL]
.....[SEAL]

.....
.....
.....
.....
.....
} Park Commissioners

Countersigned this.....day of.....

.....
Comptroller.

STATE OF WISCONSIN }
County of Milwaukee } ss.

of the City of Milwaukee, being severally duly sworn, severally say and each for himself saith that he is the person of that name who signed the above and foregoing contract as surety, that he is the owner of real estate in the County of Milwaukee, over and above all incumbrances and subject to execution, of a cash value equal to the

sum of .....
dollars, and that he is worth said sum over and above all his debts and liabilities, in property in said county, subject to execution.
Note (Sureties sign here before swearing).

.....
.....

Subscribed and sworn to before me this..... day of .....
My commission expires..... .....

Notary Public, Milwaukee County, Wis.

The following is a part of the form of a contract executed by a contractor with the Board of Park Commissioners and the City Council of Kansas City, Missouri, for the construction of certain concrete sidewalks. Particular attention is called to the number of signatures to this contract, including not only the contractor and the board of park commissioners but also a representative, respectively, of the city counselor's office, city comptroller's office, office of the board of park commissioners and the city clerk's office.

Approximate Estimate
Sidewalk.....square feet

BOARD OF PARK COMMISSIONERS OF KANSAS CITY, MISSOURI

Resolution No. .....

Contract for Constructing Concrete Sidewalk

on ..... side ..... of .....
.....
from .....
to .....

THIS CONTRACT, made and entered into this ..... day of ..... 19....., by and between .....
.....
as principal and party of the first part, whose address is .....
.....Kansas City, Missouri, and
.....
as sureties, parties of the second part, and KANSAS CITY, party of the third part.

Witnesseth: That whereas, the said party of the first part is the lowest and best bidder for making the following city improvements, *viz.:*

Constructing and guaranteeing for a period of three (3) years, concrete sidewalk on .....
side..... of .....
.....
from .....
.....
to.....
.....
.....
.....

Now, therefore, the said party of the first part hereby agrees and binds himself, his heirs, executors, administrators and assigns, itself and its successors and assigns, to furnish all the material and do all the work necessary to complete the said improvements within the time provided for in this contract, according to plans and specifications for said improvement adopted, perfected and approved by the Board of Park Commissioners on the ..... day of ....., 19....., by Resolution No. ..... and on file in the office of said Board, which said plans and specifications are hereto attached, and made a part of this contract, and to the satisfaction and acceptance of the Board of Park Commissioners of Kansas City. And the

said party of the first part does hereby guarantee that the work herein mentioned shall be constructed with such materials and in such manner that the same shall endure without the need of any repairs for a period of three (3) years from and after the completion and acceptance of the same, without further compensation than that provided for in this contract for the first cost of said work, and the acceptance of the work done hereunder and the issue of special tax bills in payment therefor shall not be held to prevent the maintenance of an action on the contractor's bond for failure to construct said work with such materials and in such manner that the same shall endure without the need of any repairs for the required period.

Terms "contractor" and "superintendent of parks." Whenever the term "contractor" or pronoun in place thereof occurs in this agreement, it is understood to mean the party or parties of the first part to this contract. And whenever the term "board of park commissioners" or "superintendent of parks" occurs, it is understood to mean the Board of Park Commissioners of Kansas City or Superintendent of Parks of Kansas City, respectively.

Manner of prosecution. The work herein contemplated shall be commenced at such point or points, and prosecuted in such manner and with such force as the board of park commissioners may direct.

Detention. No additional time to that stated in this contract for the beginning or completion of the work shall be allowed except for reasons that shall appear sufficient to the common council, in which case the additional time to be allowed shall be fixed by an ordinance of the city, after being approved by the board of park commissioners.

Workmen. The contractor shall employ only competent foremen and skilled laborers, and shall promptly discharge any man or men who refuse to obey the orders of the superintendent of parks or his authorized agent, or who are considered by him incompetent or disorderly.

Assignment of contract. The contractor shall not transfer this contract without the approval of the board of park commissioners and the common council. No transfer shall, under any circumstances, relieve the contractor of his liabilities and obligations under this contract.

Precautions. The contractor shall put up and maintain sufficient lights at night, suitable barricades, and take any other and all precautions to guard against damage or injury to person or property, and shall interfere as little as practicable with the use of said boulevard.

Grade. The term "grade" used in the specifications hereto attached is understood to refer to and indicate the legally established grade of the boulevard, parkway, road, street, avenue or alley.

Price includes. The price per square foot of sidewalk, as hereinafter mentioned, includes and is in full compensation for all the labor, material, tools or supplies of whatever nature that are employed or used in the prosecution, construction, preservation, or are in any manner whatsoever stated, implied or involved in the proper execution and protection of the work herein contemplated, according to the terms and conditions of this contract and specifications.

Inspector. The superintendent of parks may appoint an inspector or other subordinate who shall represent him on this work, and any orders such inspector may give relative to any detail of the work shall have the same force and effect as if given by the superintendent of parks in person.

Plans and specifications. The plans and specifications on file in the office of the board of park commissioners relating to the work herein contemplated, and all plans which may be made subsequent to the date of this contract, of an explanatory nature thereto, are understood to be a part of this contract and specifications.

The quantity, the aggregate cost of the work and the amount due the contractor for work done under this contract according to the price named herein shall be determined by the board of park commissioners. This amount, less any and all deductions which the board of park commissioners is empowered or instructed to make in accordance with the terms of this contract and specifications, shall, in the event of the faithful performance and due acceptance of the work, constitute the whole amount due under this contract for which special tax bills shall be issued according to law on the completion and acceptance of the work.

All materials and workmanship used in the work contemplated in this contract shall be subject to the inspection of the superintendent of parks, and his decision as to what conforms to the specifications shall be final and conclusive on all parties, and any work which he shall decide to be defective shall be removed, rebuilt or made good by the contractor at his own cost. All condemned materials shall be immediately removed from the vicinity of the work.

Failure or neglect on the part of the superintendent of parks to condemn or reject bad or inferior material or workmanship shall not be construed to imply an acceptance of any work. The work herein specified to be done is not to be considered as finally accepted until the special tax bills are issued for the same, and the issue of special tax bills in payment therefor shall be considered an acceptance thereof by the board of park commissioners and the said city.

The contractor shall protect from damage, caused by the negligence of himself, his agents, officers, employees, or associates, all gas and other pipes, and lamp posts, and property of public utility companies, and shall reset

and rebuild to proper line and grade and repair any sidewalks, curbing, guttering or catch basins in accordance with the specifications for constructing such sidewalks, curbing, guttering or catch basins that may become damaged or displaced at any time during the progress of the work, and he shall protect from damage all property of the city.

Cleaning up and repairing damages. Upon completion of each block in length of the work herein contemplated, the contractor shall immediately remove all materials, earth, stones and rubbish of every kind from the boulevard, and any damage or injury done to private or public property along the boulevard by the contractor, and any damage to any property of the city shall be made good by him, before the acceptance of the work.

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GENERAL STIPULATIONS

It is further expressly agreed between the parties hereto that this contract is made subject to the conditions and stipulations which follow, *viz.:*

1. The first party shall commence work at such points as the board of park commissioners may direct, and shall conform to its directions as to the order of time in which the different parts of the work shall be done, as well as to all its other instructions as to the mode of doing the same.

2. Whenever the contractor is not present on the work, orders will be given to the superintendents or overseers in immediate charge thereof, and shall by them be received and obeyed; and if any person employed in the work shall refuse or neglect to obey the instructions of the board of park commissioners or its duly authorized agents, in any way relating to the work, or shall appear to the superintendent of parks to be incompetent, disorderly or unfaithful, he shall, upon the requisition of the superintendent of parks, be at once discharged and not again employed on any part of the work.

3. Any work not herein specified, which may be fairly implied as included in this contract, of which the board of park commissioners shall be the judge, shall be done by the first party without extra charge.

4. The work embraced in this contract shall be begun within .....(.....) days after this contract binds and takes effect, and shall be prosecuted regularly and uninterruptedly thereafter (unless the said board of park commissioners directs otherwise in writing), with such force as to secure the full completion of all the work embraced in this contract within ..... (.....) calendar days from the date of its confirmation, and if the contractor shall fail to complete the work embraced in this contract within the time above specified, an amount equal to the sum of fifteen dollars ($15.00) per day for each and every day thereafter until such completion shall be deducted as liquidated damages for such breach of this contract from the amount of the final estimate of such work.

And no extension of the time hereinbefore provided for the completion of said work, granted by said third party at the request or upon the petition of the contractor, shall be held or taken as a waiver of the right to deduct the sum of fifteen dollars ($15.00) per day as liquidated damages aforesaid for each and every day said contract shall remain uncompleted after the time provided in such extension for completion of said work.

5. If, in the opinion of the board of park commissioners, the first party, at any time during the progress of the work, is not prosecuting the work with sufficient force to insure its completion within the time specified in this contract, it may notify the first party to employ such additional force as it deems sufficient; and on the failure of said first party to comply with such notice within three (3) days after its delivery, the board of park commissioners may, at its option, declare this contract annulled. But such declaration annulling the contract must be confirmed and ratified by ordinance before having any force or effect.

And the power is reserved to the board of park commissioners by Kansas City to suspend or annul this contract, or to suspend the doing of any work thereunder at any time for any failure on the part of the first part to fulfill the same, or for other good cause; and any action of the board of park commissioners in suspending or annulling this contract, or suspending the doing of the work thereunder, and its decision as to the existence of cause or reason for such annulment or suspension, shall be conclusive as to the existence of such cause or reason in any controversy or litigation between the parties hereto, or others claiming under them. If this contract be so suspended or annulled, the said first party shall not be entitled to anything on account of damages thereby, nor shall such annulment or suspension in anywise affect the right of said Kansas City to damages and penalties claimed by it on account of the failure of said first party. But said abatement or annulment, or suspension, must be ratified by ordinance before being of any force or effect.

6. The first party will be required to observe all city ordinances in relation to obstructing the streets, maintaining signals, keeping open passageway and protecting same where exposed, and generally to obey all laws

and ordinances controlling or limiting those engaged on the work; and the said first and second parties hereby expressly bind themselves to indemnify and save harmless Kansas City from all suits or actions of every name and description brought against the said city for or on account of any injuries or damages received or sustained by any party, parties or property, or from the acts or negligence of said contractor, or his servants or agents, in doing the work herein contracted for, or by or in consequence of any negligence in guarding the same, or any improper material used in its construction, or by or on account of any act or omission of the said first party, or his servants or agents.

7. The first party further agrees that he will pay for the work and labor of all laborers, subcontractors and teamsters, teams, wagons and trucks employed on the work and for all materials and service used therein, or employed in connection therewith (whether or not of a character for which a mechanic's lien would apply in case the third party were a private person).

8. It is further agreed that the passage of the ordinance hereafter referred to, and the doing of the work embraced in this contract, without any proper petition to the common council from the real estate owners to have said work done, shall not render the city liable to pay, directly or indirectly, for such work, or any part thereof, otherwise than by the issue of special tax bills, and the said first party shall assume all risks as to the validity of such special tax bills, and take the same without recourse against Kansas City in any event.

9. This contract is entered into subject to the approval or rejection of the Common Council, and shall not bind until so approved, and is subject to the city charter and ordinances in general.

10. It is further expressly agreed that in no event shall Kansas City be liable or responsible to the contractor or to any other person for or on account of any stoppage or delay of the work herein provided for, by injunction or other legal or equitable proceedings, or from or by or on account of any delay from any other cause whatever.

11. It is further expressly agreed and stipulated by the said party of the first part, that he will not require laborers, employed by him on such work, to labor more than eight (8) hours per day, and the said party of the first part further agrees that he will faithfully and in all respects comply with the provisions of the general ordinances of Kansas City.

12. In consideration of the completion by the said first party of all work embraced in this contract in conformity with the specifications hereto attached and stipulations herein contained, Kansas City, party of the third part, hereby agrees to pay to the said first party at the following rate per square foot, *viz.*:

For each square foot of sidewalk, the sum of .....

..... (.....)

13. And the said party of the first part further agrees that he will not be entitled to receive payment for any portion of the aforesaid work or materials until the same shall have been fully completed in the manner set forth in this agreement to the satisfaction and acceptance of the board of park commissioners. And that he will then receive pay according to the above schedule of prices, in special tax bills against and upon the lands liable to be charged with the cost thereof, as provided by law, according to the charter and ordinances of said city, and that his receipt therefor shall be in full of all claims against Kansas City on account of said work.

Said parties of the second part hereby guarantee that the said party of the first part will well and truly perform the covenants hereinbefore contained and will pay for the work and labor of all laborers, subcontractors and teamsters, teams, wagons and trucks employed on the work, and for all materials and service used therein, or employed in connection therewith (whether or not of a character for which a mechanic's lien would apply in case the third party were a private person), and if the cost of such work and labor and materials is not paid in full by the said party of the first part, then the said parties of the second part hereby agree to pay for said work, labor and materials, or any part thereof which shall not be paid by said first party within ten (10) days after the money for said work, labor and materials becomes due and payable, and this provision shall entitle any or all laborers, subcontractors, and teamsters, and owners of teams, wagons and trucks who may do work, and parties who may furnish materials or service used therein or employed in connection therewith (whether or not of a character for which a mechanic's lien would apply in case the third party were a private person), on or for the improvements to be done under this contract, to sue and recover from said second parties, or either of them, the amount due or unpaid to them, or either of them, by said first party; the said parties of the second part hereby agree with Kansas City that the said party of the first part will well and faithfully perform each and all the terms and stipulations in the foregoing contract, to be done, kept and performed on the part of the first party; but said second parties shall not be liable on this guarantee on account of the materials used and labor done upon said work beyond the sum of ..... dollars ($.....), the estimated cost of materials used and labor done upon said work.

And the said parties of the first and second part hereby further jointly and severally agree with Kansas City that, if the work embraced in this contract be not begun within the period stated in this contract, they will pay

to Kansas City the sum of..... dollars (.....), as liquidated damages for such breach of this contract.

It is further agreed that the liability of the parties of the second part shall not be affected by any extension of the time for the completion of said work which may be granted by ordinance of the common council.

Guaranty. The party of the first part expressly agrees to construct the said sidewalks with such material and in such manner that the same shall endure without the need of any repairs for a period of three (3) years from and after the completion and acceptance thereof; and further agrees to furnish a bond satisfactory to the city counselor and city comptroller guaranteeing this agreement.

It is expressly agreed that the superintendent of parks shall be the sole and final arbitrator to determine at any and all times within said period of three (3) years whether or not said sidewalk conforms to the aforesaid guaranty, and that when said superintendent of parks shall determine that any faults, defects or imperfections exist in said sidewalk during the period aforesaid, and he shall give the party of the first part, or his agent, notice thereof in writing, by leaving same at first party's above named address, if said party of the first part shall fail to make good such faults, defects or imperfections, within ten (10) days after delivery of such notice at said address, then this guaranty shall be held to have been broken, and Kansas City may make or cause to be made good such faults, defects or imperfections, and said party of the first part shall be liable to pay to Kansas City the cost thereof.

In witness whereof, the said parties of the first and second parts have hereunto set their hands and seals respectively, and Kansas City executes this contract by its board of park commissioners.

.....[SEAL]
.....[SEAL]
.....[SEAL]

KANSAS CITY,
BY BOARD OF PARK COMMISSIONERS
of Kansas City, Missouri.

Attest: .....*Secretary.* By.....*President.*

CITY COUNSELOR'S OFFICE

Kansas City, Missouri, ... 19.....

The foregoing contract and bond are in due form according to law, and are hereby approved.

.....
Assistant City Counselor.

CITY COMPTROLLER'S OFFICE

Kansas City, Missouri,..... 19.....

The sureties and bond aforesaid are hereby approved as sufficient.

.....
City Comptroller.

OFFICE OF BOARD OF PARK COMMISSIONERS

Kansas City, Missouri, ... 19.....

The foregoing contract and bond have this day been approved and confirmed by the board of park commissioners, and the president and secretary were ordered to execute the same on behalf of Kansas City, in the name of said board of park commissioners.

Witness my hand and seal of the said Board of Park Commissioners of Kansas City, Missouri, this..... ..... day of ..... 19.....

.....
Secretary.

CITY CLERK'S OFFICE

Kansas City, Missouri, ... 19.....

The foregoing contract and bond have been this day ratified, approved and confirmed by the Common Council of Kansas City, by Ordinance No. ....., approved .....

Attest: .....
City Clerk.

By .....*Deputy*

The remainder of this contract comprises a form of a maintenance bond whereby the contractor bound himself to make good any deficiencies which

might appear in the sidewalks for a period of three years; and a set of detailed specifications governing the construction of the walks.

The following are the general conditions of a contract executed by a contractor with the South Park Commissioners, Chicago, for the construction of a number of bridges in 1925. While some of these conditions apply specifically to situations peculiar to this series of construction work, they embody most of the desirable general principles governing contractual work in general.

GENERAL CONDITIONS OF THE CONTRACT

1. Principles and Definitions.

(*a*) The contract documents consist of the agreement, the general conditions of the contract, the specifications and drawings for the above-named bridges, including all modifications thereof incorporated in the documents before their execution. These form the contract.

(*b*) The term commissioners refers to the South Park Commissioners of Chicago, party to the contract, acting through its duly authorized officers. The term contractor refers to the contractor, party to the contract. The term general superintendent refers to the general superintendent of the South Park Commissioners, the chief executive officer. The word engineer is used in these specifications to designate the chief engineer of the commissioners, or his duly authorized assistant.

(*c*) The term subcontractor includes only those having direct contracts with the contractor and includes one who furnishes material after a special design according to the plans or specifications of this work, but does not include one who merely furnishes material not so worked.

(*d*) Written notice shall be termed to have been duly served if delivered in person to the individual or to a member of the firm or official of the corporation for whom it is intended, or if delivered or sent by registered mail to the last business address known to him who gives the notice.

2. Execution, Correlation and Intent of Documents.

(*a*) The contract documents shall be signed in duplicate by the commissioners and contractor. In case of failure to sign the general conditions, drawings, or specifications, the engineer shall identify them.

(*b*) The contract documents are complementary, and what is called for by any one shall be as binding as if called for by all.

(*c*) The intention of the contract documents is to include all labor and materials necessary for the proper execution of the work. Any material or labor shown on the plans and not mentioned in the specifications, or vice versa, is to be furnished by the contractor the same as if mentioned in the specifications and set forth in the plans. It is the intention of these plans and specifications to obtain materials of the best possible grades for the use for which they are intended. Any material or work described in words which so applied have a well-known technical or trade meaning shall be held to refer to such recognized standards.

3. Copies of Plans Furnished.

Unless otherwise provided in the contract documents, the engineer will furnish to the contractor, free of charge, six sets of plans and specifications. All sets required over this number shall be furnished to the contractor at cost.

4. Shop Drawings.

The contractor shall submit to the engineer, shop drawings for approval as to correctness of sections and strength of details, with such promptness as to cause no delay in his work, or in that of any other contractor. The engineer will pass on these drawings and details with reasonable promptness, and the contractor shall make any corrections required by the engineer and file with him three corrected copies and furnish such additional copies as may be required in the field. No changes shall be made on any approved shop drawings or construction details without the consent in writing of the engineer. The contractor shall be responsible for the correctness of his drawings and details, as the approval of the engineer is only for general design. Any material ordered by the contractor before approval shall be at his own risk.

5. Drawings and Specifications on the Work.

The contractor shall keep one complete copy of all drawings, including shop details or construction details and specifications on the work in good order, available to the engineer and his representatives at all times.

6. Ownership of Drawings and Models.

All design drawings and specifications prepared by the engineer and copies thereof are the property of the commissioners. They are to be used on no other work without the written consent of the commissioners, and all copies of plans used by the contractor during the

progress of the work are to be returned to the commissioners at the completion of work for which they were issued. All models are to be the property of the commissioners. The ink tracings of all detail drawings made by the contractor and sub-contractors shall become the property of the commissioners.

7. Samples.

The contractor shall furnish to the engineer samples of all material which he proposes to use in the progress of the work as may be requested by the engineer. After submission and acceptance of samples by the engineer, materials corresponding thereto shall be used throughout the progress of the work.

8. Engineer Status.

The engineer, as the representative of the commissioners, will have responsible supervision of the construction of the work at all times and will make a decision on all claims of the contractor and all matters relating to the execution and progress of the work. All claims of the contractor for extra compensation shall be passed on by the engineer, but before becoming valid, shall receive the approval of the general superintendent.

The complete design plans and specifications for the structures, where the foundations for the same and the component parts thereof comprise integral parts of the structure, will be prepared by the engineer. The engineer will check, for approval or correctness, the usual detail shop plans for the structural steel work and concrete bar lists. The engineer will be the interpreter of the plans and specifications prepared by him.

9. Foremen, Superintendents and Competent Employees.

The contractor shall keep on his work, at all times during its progress, a competent foreman or superintendent and any assistants that may be necessary. All employees must be satisfactory to the engineer. Men in charge of the work for the contractor shall not be changed except with the consent of the engineer, unless they prove to be unsatisfactory to the contractor and cease to be in his employ. The man in charge shall represent the contractor in his absence and all directions given to him shall be as binding as if given to the contractor. Important directions shall be confirmed in writing to the contractor. Other directions shall be confirmed in writing on request of the contractor. The contractor shall give efficient personal supervision to the work, using his best skill and attention. He shall carefully study and compare all drawings, specifications, and other instructions and shall at once report to the engineer any error, inconsistency, or omissions which he may discover. Any employee of the contractor, who is considered incompetent or careless in his work, shall be, on demand of the engineer, removed and replaced by a competent man.

10. Materials and Appliances.

Unless otherwise stipulated, the contractor shall provide and pay for all material, labor, tools, equipment, light, water and power necessary for the prompt execution of the work. All materials shall be new. Both workmanship and material shall be of good quality. The contractor shall, if requested, furnish satisfactory evidence as to the kind and quality of materials.

Only such material, machinery, tools and implements as are necessary in the prosecution of the work shall be brought on the ground and shall be kept within reasonable limits which shall be designated by the engineer. All condemned material and such as is not suitable for the work shall be promptly removed from the premises, as the work is completed, or as it reaches successive stages of completion and cleaning up is practicable. All rubbish, surplus material, lumber, scaffolding, forms, etc., shall be removed from the premises. Earthwork shall be properly graded and disposed of, and the whole work and surroundings shall be left, and at all times maintained, in as neat a condition as is in keeping with the character of the work being done.

11. Access and Inspection of Work.

The engineer or his duly authorized assistant shall at all times have free access to the work and shall be entitled to receive from the contractor all necessary information. It is not intended that the contractor shall give out information which is more or less confidential in his business and which would divulge any process of manufacture which he is legitimately entitled to keep secret.

If the specifications, the engineer's instructions, laws, ordinances or any public authority requires any work to be especially tested or approved, the contractor shall give the engineer timely notice of its readiness for inspection, and, if the inspection is by an authority other than the engineer, of the date fixed for such inspection. Inspections by the engineer shall be promptly made. If any such work should be covered up without approval or consent of the engineer, it must, if so required, be uncovered for examination at the contractor's expense.

Reëxamination of questioned work may be ordered by the engineer. If such work be found in accordance with the contract the commissioners shall pay the cost of reëxamination and replacement. If such work be found not in accordance with the contract, through the fault of the contractor or his representatives, the contractor shall pay such cost unless he shall show that the defect in the work was caused by another contractor, and in that event the other contractor shall pay the cost.

Any work that is rejected by the engineer or his representatives shall be torn down and replaced at the contractor's expense. Any work so condemned shall be replaced with reasonable promptness by this contractor.

12. Correction of Work before Final Payment.

The contractor shall promptly remove from the premises all material condemned by the engineer as failing to conform to the contract, whether incorporated in the work or not, and the contractor shall promptly replace and reëxecute his own work in accordance with the contract without expense to the commissioners and shall bear the expense of making good all work of other contractors displaced by such removal or replacement. If the contractor does not remove such condemned work and materials within a reasonable time fixed by written notice, the commissioners may remove them and store the material at the expense of the contractor. If the contractor does not pay the expense of such removal within five days thereafter, the commissioners may upon ten days' written notice, sell such material at auction and at private sale, and shall account for the net proceeds thereof, after deducting all costs and expenses which should have been borne by the contractor.

13. Correction of Work after Final Payment.

Neither the final certificate nor any payment nor any provision in the contract documents shall relieve the contractor of responsibility for faulty materials or workmanship, and he shall remedy any defects due thereto and pay for any damage to other work resulting therefrom, which shall appear within a period of two years after installation. The engineer shall give notice of observed defects with reasonable promptness. All questions arising under this article shall be decided under Article 8.

14. Protection of Work and Property.

The contractor shall continuously maintain adequate protection of all his work from damage and shall protect the property of the commissioners, the Illinois Central Railroad Company, and all others from injury arising in connection with this contract. He shall make good any damage or injury to persons or property that may be occasioned directly or indirectly by his operations in the prosecution of the contract. In the erection or construction of those parts of the structure which are upon, adjacent to, or over the right of way of the Illinois Central Railroad Company, the contractor will be required to exercise unusual care to carry on his operations outside of the clearance lines fixed on the construction plan prepared by the engineer and approved by the Illinois Central Railroad Company, and shall abide by the notes of instructions shown on that plan, which plan is made a part of the contract documents.

15. Emergencies.

In an emergency affecting safety of life or property not considered by the contractor as within the provisions of Article 14, then the contractor, without special instructions or authorization from the engineer, is hereby permitted to act at his discretion to prevent such threatened loss or injury and he shall so act if so instructed or authorized by the engineer. Any compensation claimed to be due him therefor shall be determined under Articles 8 and 19, regardless of the limitations in Article 20 and in the second paragraph of Article 19.

16. Contractor's Liability Insurance.

The contractor shall maintain such insurance as shall protect him from claims under workmen's compensation acts and from any other claims for damages for personal injury, including death, which may arise from operations under this contract, whether such operations be by himself or by any subcontractor or anyone directly or indirectly employed by either of them. Certificates of such insurance shall be filed with the commissioners and shall be subject to its approval for adequacy of protection.

17. Fire Insurance.

The commissioners shall maintain fire insurance on all structures on which work is to be done and upon all materials in or adjacent thereto and intended for use thereon, to at least eighty per cent of the insurable value thereof. All policies shall be open for inspection by the contractor. The loss, if any, is to be made adjustable with and payable to the commissioners. The commissioners shall settle and adjust any losses with the insurers and shall distribute any money received from insurers in accordance with the relative interests of the commissioners and the contractors at the time of said loss.

18. Guarantee Bond.

The contractor will be required to execute a contract in the form now on file in the office of the commissioners, and which may be seen on application within ten days from date of mailing of notice that the contract is ready for signature, and at the same time give a bond in the sum of twenty-five per cent of the estimated amount of his proposed contract in the form now on file in the office of the commissioners, and which may be seen on application, said bond to be executed by the contractor and a responsible surety company authorized to do business in the State of Illinois, and satisfactory to the commissioners. In case of the contractor's failure or neglect to present said contract and bond duly executed within said ten days, the commissioners may at its option declare said bid and the acceptance thereof, null and void, and forfeit the deposit accompanying said bid as liquidated damages.

19. Changes in the Work.

The commissioners, without invalidating the contract, may make changes by altering, adding to and deducting from the work, the contract sum being ad-

justed accordingly. All such work shall be executed under the conditions of the original contract except that any claims for extension of time thereof shall be adjusted at the time of ordering such change.

Except as provided in Article 15, no change shall be made unless in pursuance of a written order from the commissioners signed by the engineer and countersigned by the general superintendent or a written order from the engineer countersigned by the general superintendent stating that the commissioners have authorized the change, and no claim for any addition to the contract sum shall be valid unless so ordered.

The value of any such change shall be determined in one or more of the following ways: (*a*) By estimate and acceptance in a lump sum; (*b*) By unit prices named in the contract or subsequently agreed upon; (*c*) By cost and percentage, or by cost and a fixed fee; (*d*) If none of the above methods is agreed upon, the contractor, provided he received an order as above, shall proceed with the work. In cases (*c*) and (*d*) the contractor shall keep and present, in such form as the engineer may direct, a correct account of the net cost of labor and materials, together with vouchers. In any case the engineer shall certify to the amount, including a reasonable profit due to the contractor. Pending final determination of value, payments on account of changes shall be made on the engineer's certificate.

20. Claims for Extras.

If the contractor claims that any instructions, by drawings or otherwise, involve extra cost under this contract, he shall give the engineer written notice thereof before proceeding to execute the work, and in any event within two weeks of receiving such instructions, and the procedure shall then be as provided in Article 19. No such claim shall be valid unless so made.

21. Payments.

Payments will be made of eighty-five per cent of the value of the work done or material delivered during each calendar month in full compliance with the contract and specifications, provided the progress made is such as to insure completion of the contract within the specified time. The value of the work done or the material delivered will be determined by the estimate of the engineer, to be made not later than the fifth day of the following month. The remaining fifteen per cent shall be retained until the final completion of the work, the issuance of final certificate by the engineer and its acceptance by the South Park Commissioners. In no case, however, shall the contractor be entitled to payment which, in the judgment of the engineer, will leave the balance withheld insufficient to complete the work. The Commissioners will issue permits to enter and use the necessary area for construction purposes, free of charge to the contractor. The contractor shall pay for all licenses and shall give all notices, pay all fees, and comply with all laws, ordinances, rules and regulations bearing on the conduct of the work as drawn and specified. If the contractor observes that the drawings and specifications are at variance, he shall promptly notify the engineer in writing, and any necessary changes shall be adjusted under Article 19. If the contractor performs any work, knowing it to be contrary to such laws, rules and regulations and without such notice to the engineer, he shall bear all costs arising therefrom.

23. Royalties and Patents.

The contractor shall pay all royalty and license fees. He shall defend all suits or claims for infringement on any patent rights and save the commissioners harmless from loss on account thereof.

24. Use of Premises.

The contractor shall confine his apparatus, the storage of materials and the operations of his workmen to limits indicated by law, ordinances, permits or directions of the engineer, and shall not unreasonably encumber the premises with his materials. The contractor shall not load or permit any part of any structure to be loaded with a weight that will endanger its safety. The contractor shall enforce the engineer's instructions regarding signs, advertisements, fires and smoking.

25. Cutting, Patching and Digging.

The contractor shall do all cutting, fitting and patching of his work that may be required to make the several parts come together properly or fit it to receive or be received by work of other contractors shown on, or reasonably implied by the drawings and specifications for the completed structure and he shall make good after them, as the engineer may direct. He shall also do any and all shoring of any sort that may be necessary to protect adjacent property.

Any cost caused by defective or ill-timed work shall be borne by the party responsible therefor.

The contractor shall not endanger any work by cutting, digging, or otherwise and shall not cut or alter work of any other contractor unless with the consent of the engineer.

26. Conformity with Ordinances.

All park ordinances and police regulations regarding the use of the park grounds, obstructions of driveways or boulevards and safeguarding the public must be strictly observed.

Such material, tools and machinery as are placed on the park grounds, driveways or boulevards, within limits assigned, shall be well guarded with all necessary red lights, signals of danger and barricades.

27. Maintenance of Order.

Good order shall at all times be maintained on the work and no intoxicated or disorderly persons shall be permitted on the premises.

28. Local Conditions.

Each bidder shall acquaint himself with all local conditions that may affect work, such as character of soil, means of access, exposure of situation, etc. Information of this sort which may be in the possession of the South Park Commissioners, will be given prospective bidders by the engineer, but no statements of this character, either verbal or written, shall be considered complete, accurate or binding upon the commissioners except such as are contained in the attached specifications.

29. Surveys.

The engineer will establish on the ground the locations of the center lines of each structure and also locations of the transverse center lines for all structures; he will also establish at each structure at least two permanent bench marks with grades referred to Chicago datum from which center lines and bench marks the contractor shall have all necessary lines, centers and grades established for his work by competent surveyors employed by him.

30. Black Dirt and Shrubbery.

Black dirt and other fertile surface soil within the areas occupied by any contractor or handled by him in making excavations or doing grading shall be piled separately in locations selected by the engineer. It shall be protected and shall not be mixed with other material; storage sites will be selected with a view to making rehandling of this soil unnecessary. When other grading work is completed, this soil shall be respread by grading contractor on areas reserved for planting. It shall not be used for subsurface back filling.

All trees and shrubbery adjacent to the work shall be boxed, fenced or otherwise protected as directed by the engineer. Any trees or shrubbery damaged by the contractor or his employees shall be paid for by him at the full and proper value thereof.

31. Contractor's Office.

The contractor for the work shall provide such offices, tool sheds and other accessories as he may require for his work. His subcontractors shall have the privilege of making reasonable use of such offices and facilities.

32. Delays.

If the contractor be delayed in the completion of the work by any act or neglect of the commissioners or of any of its employees, or by any other contractor employed by the commissioners, or by changes ordered in the work, or by strikes, fires, unusual delay of common carriers, unavoidable casualties, or any cause beyond the contractor's control, or by delay authorized by the engineer, or by any cause which the engineer shall decide to justify the delay, then the time of completion shall be extended for such reasonable time as the engineer may decide. No such extension shall be made for delay occurring more than seven days before claims therefor are made in writing to the engineer. In case of a continuing cause of delay only one claim is necessary.

33. Commissioners' Right to Terminate Contracts.

The commissioners, upon certificate of the engineer, approved by the general superintendent, that sufficient cause exists to justify such action may, without prejudice to any other right or remedy and after giving the contractor seven days written notice, terminate the employment of the contractor and take possession of the premises, and of all material, tools and appliances thereon, finish the work by whatever method it may deem expedient, for any of the following reasons:

(*a*) If the contractor should be adjudged a bankrupt if he should make a general assignment for the benefit of his creditors, or if a receiver should be appointed on account of his insolvency.

(*b*) If he should, except in cases recited in Article 32, persistently or repeatedly refuse or fail to supply enough properly skilled workmen or proper materials.

(*c*) If he should fail to make prompt payment to subcontractors for material or labor.

(*d*) If he should persistently disregard laws, ordinances or instructions of the engineer.

(*e*) If he should be guilty of a substantial violation of any provision of the contract.

In any such case, the contractor shall not be entitled to receive any further payment until the work is finished. If the unpaid balance of the contract price shall exceed the expense of finishing the work, including the cost of supervision, such excess shall be paid by the contractor. If such expense shall exceed such unpaid balance, the contractor shall pay the difference to the commissioners. The expense incurred by the commissioners, as herein provided, and the damage incurred through the contractor's default, shall be certified by the engineer and approved by the general superintendent.

34. Separate Contracts.

The commissioners reserve the right to let other contracts in connection with this work. The contractor shall afford other contractors reasonable opportunity for the introduction and storage of their materials and the execution of their work, and shall properly connect and coördinate his work with theirs.

If any part of this contractor's work depends for proper execution or results upon the work of any other contractor, this contractor shall inspect and properly report to the engineer any defects in such work as may render it unsuitable for such execution and results. His failure so to inspect and report shall constitute an acceptance of the other contractor's work as fit and proper for the reception of his work except as to defects which may develop in the other contractor's work after the execution of his work.

To insure proper execution of his subsequent work the contractor shall measure work already in place and shall at once report to the engineer any discrepancy between the executed work and the drawings.

35. Subcontracts.

The contractor shall, as soon as practicable, after signing the contract, notify the engineer in writing of the names of the subcontractors proposed for any principal parts of the work, and shall not employ any that the engineer may within a reasonable time reject.

The engineer shall, on request, furnish to any subcontractor, whenever practicable, evidence of the amount certified to on his account.

The contractor agrees hereby that he is as fully responsible to the commissioners for the acts and omissions of his subcontractors and of persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him. Nothing contained in the contract documents shall create any contractual relation between the subcontractors and the commissioners.

36. Relations of Contractor and Subcontractor.

The contractor agrees to bind every subcontractor to the terms of general conditions, drawings and specifications as far as applicable to his work, including the following provisions of this article unless specifically noted to the contrary in a subcontract approved in writing as adequate by the commissioners. Such subcontracts shall be so drawn that the subcontractor agrees:

(*a*) To be bound to the contractor by the terms of the general conditions, drawings and specifications and to assume toward him all obligations and responsibilities that he, by those documents, assumes toward the commissioners.

(*b*) To make all claims for extras, for extensions of time, and for damages for delays or otherwise, to the contractor in the manner provided in the general conditions for like claims by the contractor upon the commissioners.

The contractor agrees:

(*a*) To be bound to the subcontractor by all the obligations that the commissioners assume to the contractor under the general conditions, drawings and specifications.

(*b*) To pay the subcontractor upon issuance of certificates, the amount allowed to the contractor on account of the subcontractor's work to the extent of the subcontractor's interest therein.

(*c*) To pay the subcontractor on the issuance of certificates if issued otherwise than in (*d*) so that at all times his total payments shall be as large in proportion to the value of the work done by him as the total amount certified to the contractor is to the value of the work done by him.

(*d*) To pay the subcontractor on demand for his work or materials as far as executed and fixed in place, less the retained percentage at the time the certificates should issue, even though the engineer fails to issue for any cause not the fault of the subcontractor.

(*e*) To pay the subcontractor a just share of any fire insurance money received by him, the contractor, under Article 17 of the general conditions.

(*f*) To make no demand for liquidated damages or penalty for delay in any sum in excess of such amount as may be specifically named in the subcontract.

(*g*) That no claim for services rendered or materials furnished by the contractor to the subcontractor shall be valid unless written notice is given thereof by the contractor to the subcontractor during the first ten days of the calendar month following that which the claim originated.

(*h*) To give the subcontractor an opportunity to be present and submit evidence in any controversy involving his rights.

Nothing in this article shall create any obligation on the part of the commissioners to pay or to see to the payment of any sums to any subcontractor.

37. Shelters.

The contractor shall provide temporary shelters for the protection of any materials that may be damaged by exposure or otherwise, and he shall be responsible for all loss or damage to scaffolding, tools, equipment, apparatus and all other materials used in connection with his work.

38. Watchmen.

The contractor shall be responsible for all damage due to intrusion, and for the proper protection of the bridge sites, and shall provide competent watchmen both day and night, including Saturdays, Sundays and holidays, from the time the work is commenced at the sites until the final completion of his work.

39. Photographs.

The contractor shall employ an experienced photographer, approved by the commissioners, who shall take two photographs, each being a different view of the structure, every two weeks from the time the work is commenced until the work is completed. Three prints of each photograph shall be furnished to the commissioners. These prints shall be eight by ten inches in size, mounted on linen for binding, and each print shall be numbered, dated and identified as to the structure and view. Prints shall be made on Velox or equal finish paper.

40. Advertising.

No advertising will be permitted on, in or about the structures or on the territory of the South Park System occupied by the contractor.

41. Coöperation.

The contractor shall coöperate with all other contractors employed by the commissioners in connection with this work in such a manner and to such an extent as to best facilitate the completion of the entire project in the shortest possible time, subject at all times to the approval of the commissioners. It shall be clearly understood that the commissioners reserve the right and intents to award other contracts for work to be conducted at the same time and in connection with the work contemplated under this contract. It shall be the duty of the contractor to work with such other contractors and employees, rendering such assistance and so arranging his work that the entire project will be delivered complete in the best possible condition and in the shortest possible time.

The contractor shall keep himself fully informed at all times regarding all details of the work including not only installation at the structure, but also the condition of the work in the shops wherever materials are under construction for any portion of the structure involving in any manner the work being furnished under this contract, and he shall be responsible for all delays that may result in his failure to install his own work in proper manner and in proper time.

42. Liens and Suits.

(*a*) Neither the contractor nor any subcontractor, material men or any other person shall file or maintain a lien, commonly called a mechanic's lien, for materials delivered for use in, or work done in the performance of this contract, and the right to maintain such lien for any or all of the above-named parties is hereby expressly waived, except in the event of failure or refusal of the commissioners to pay the amount called for by the certificate of the engineer within five days of the date of its tender to the commissioners for its payment. Then, in such case only, shall any of the above-named parties have the right to file and maintain a mechanic's lien.

(*b*) Neither the final payment nor any part of the retained percentage shall become due until the contractor, if required, shall deliver to the commissioners a complete release of all liens arising out of this contract, or receipts in full in lieu thereof and, if required in either case, an affidavit that so far as he has knowledge or information the releases and receipts include all the labor and material for which a lien could be filed; but the contractor may, if any subcontractor refuses to furnish a release or receipt in full, furnish a bond satisfactory to the engineer, to indemnify the commissioners against any lien.

(*c*) The contractor shall and will indemnify, save harmless and defend the commissioners from any and all suits, actions, legal proceedings, claims, demands, damages, costs, expenses and attorney's fees in any manner caused by, arising from, incident to, connected with or growing out of the execution of the work herein contracted for.

43. Protection of Railroad Company.

In order to protect the Illinois Central Railroad Company from damage caused by falling objects, or in any other way, during the progress of work contemplated herein, the contractor shall cause to be attached to his liability insurance policies and duly approved by an authorized officer of the insuring company, such public liability endorsement as shall operate to extend the said policy to include the Illinois Central Railroad Company as its interests may appear and such as shall be satisfactory to said railroad company.

The contractor doing the work specified shall indemnify, save harmless and defend the Illinois Central Railroad Company from any and all suits, actions, legal proceedings, claims, demands, damages, costs, expenses and attorney's fees in any manner caused by, arising from, incident to, connected with, or growing out of the execution of the work.

44. Failure to Complete on Time.

Time is of the essence of this contract and, should said party of the first part fail, refuse or neglect to complete the work covered by this contract within the time agreed upon, said party of the second part may waive the time limit and permit said party of the first part to finish the said work within a reasonable period, to be determined by said party of the second part. Should the original time limit be thus waived, the actual amount of damages to said party of the second part for each day's delay beyond the time originally set for completion shall be determined by the general superintendent of said party of the second part and shall be deducted from the balance due said party of the first part on account of this contract, or, in case such balance is insufficient, the amount of said damages shall, on demand of said party of the second part, be refunded by said party of the first part to said party of the second part.

45. Office for Engineer and Inspector.

The contractor shall furnish at a location to be selected by the engineer, a suitable office for the use of the engineer and inspector, having a floor area of approximately three hundred square feet, equipped with a plan desk, suitable shelves, drawers and locker. This office shall be provided with locks and keys. The office built by this contractor shall remain until the final completion of the structure for which it is intended, and shall be provided with lights and heat and telephone service, which shall be maintained by the different contractors as follows:

(*a*) By this contractor until the beginning of construction of concrete incasing.

(*b*) By the contractor for the concrete incasing until

the final completion and acceptance of all structures, at which time the office and furniture therein shall become his property and he shall have them removed from the site.

BIBLIOGRAPHY

"Parks and Park Engineering," William T. Lyle. John W. Wiley & Sons, Inc., New York, 1916, 130 pages, illustrations, drawings, map. Deals briefly with the acquisition of parks, lands and surveys, design, landscape and engineering, labor and contracts, construction.

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CHAPTER XI

MAINTENANCE

Maintenance as used in this chapter includes all activities of a park department relating to the upkeep of material properties, real and personal. Maintenance may also include original minor construction work and the carrying forward of unfinished construction projects such as, for example, the continued development of plantations. There are two main reasons why maintenance is one of the most important and fundamental of all the activities of a park department. They are:

1. Capital investments, especially investments in improvements, are conserved. Maintenance is the only antidote to depreciation. It cannot prevent depreciation entirely but it can prolong the life usefulness of improvements for a far longer period than would be the case if maintenance is neglected. Herein lies one of the very great weaknesses of a majority of the park departments in the United States. It is safe to assert that more money is wasted through improper financial provision for, and lack of, constant maintenance than through any other phase of park activity. Money may be wasted through ill-advised purchases of real property and through improper plans and poor construction, but the losses through these sources are as nothing compared with the losses through rapid deterioration of improvements because of inadequate resources for controlling depreciation.[1]

2. Maintenance ensures the effective functioning of all the human service features of each area in a park system. This involves a never-ceasing, up-to-the-day care of these features in order to keep them as nearly as possible in the perfect condition of service they were in when they came from the minds and hands of the designer and the engineer.[2]

A third reason, a psychological one, may be given. People are always greatly influenced in their conduct by the conditions of their environment. They are more apt in their use of the facilities in the parks to be more careful of these facilities if they see that there is neatness, cleanliness and order everywhere about them than if the contrary prevails.

[1] In park systems having a divisional executive organization maintenance is likely to be distributed among several different divisions rather than wholly concentrated within a division of maintenance. Hence references to maintenance will occur in Chapters on "Recreation, Horticulture, Zoölogical Gardens, Botanical Gardens, Sanitation," etc. Special attention is called to maintenance notes in the Chapter on "Horticulture," pages 671–673.

[2] Operation and maintenance. This expression is frequently used in connection with park work. Operation as considered in this manual is a general term including maintenance, perhaps, but referring specifically to all those functions of a department having to do with the organization and direction of the human uses of the properties and facilities.

Fundamental Requisites for Effective Maintenance

Adequate Revenues.

First of all, the fundamental requisite for efficient maintenance is adequate current revenues. Perhaps the most severe indictment that can be brought against the citizens of a majority of American communities having parks is their failure to provide their park officials with adequate current revenues and especially revenues for maintenance. The people are usually not backward in voting money for the acquisition and improvement of properties, but they frequently fail to realize the corresponding necessity of providing additional current revenues to maintain the improvements properly. Park officials themselves have not always exercised farsighted judgment in this respect, often lending the weight of their influence to movements for extensive improvements when they did not plainly see how they were to be maintained afterwards. Some have no doubt acted on the theory that once having the improvements the people would more readily be moved to grant additional current revenues for maintenance. It should be laid down as a principle in park management that no improvements should be undertaken without exact assurance that current revenues are sufficient to maintain them to the *n*th degree of efficiency.

No general rule can be stated as to what portion of the budget of a park department should be allocated to maintenance. Comparisons of financial statistics of existing park departments are valueless because of differences in accounting systems, types of properties, number of properties, extent of improvements, degree of use by the people, efficient or inefficient management, presence or absence of political influence in employment of workers and in the purchase of equipment, materials and supplies. Each individual park system presents a distinct problem in this respect.

Maintenance Personnel.

The second fundamental factor in good maintenance is efficient organizing and supervising leadership and a sufficient number of workers of the different types needed. This, of course, goes back to the question of adequate current income, but there is much more involved in it than the question of money. In any park system the ultimate responsibility for maintenance rests on the superintendent or chief executive. The number of maintenance employees under the superintendent, types of employees and the methods of organizing and conducting maintenance work vary greatly among systems of different sizes and even among systems of comparable size. This difference is due not only to difference in size but also to character of development of the properties and to the intensity of use of the properties. The number of maintenance employees will vary with the seasons in all park systems.

The most simple type of organization comprises the superintendent and a varying number of caretakers or park keepers, one or more for each park, depending on its size and the character of its development and intensity of use. Occasionally one caretaker may be assigned to care for several small properties. When it becomes necessary to enlarge the personnel the increase might include a foreman of park keepers and one or more gardeners. As the system becomes larger and larger, other types of employees may appear, such as a horticulturist, forester, director of a zoo, mechanics, electricians, concrete workers, masons, carpenters, wheelwrights, painters, greenhouse gardeners, nurserymen, truck drivers, animal keepers, matrons, janitors, foremen of divisions or districts or of single parks and foremen in charge of the several groups of employees engaged in special activities. In the large systems the responsibility of the superintendent may be delegated to an assistant superintendent or a superintendent of maintenance. In the large systems, too, the maintenance work may be organized as a department or a division with perhaps several subdivisions, each in charge of a foreman. In some systems the general maintenance work is organized by districts, each district being in charge of a district superintendent or foreman having under his immediate direction all maintenance employees regularly employed in his district, and general supervision over employees from special subdivisions while performing work in his district.

In the larger systems, also, some of the maintenance work may be performed by employees of divisions entirely separate from the maintenance division. Thus there may be a horticultural division in charge of a horticulturist, with gardeners and laborers under his direct supervision. This division may have under its jurisdiction not only original designing but also the maintenance of all plantations, greenhouses, conservatories, nurseries, special flower gardens or displays, and forestry. In some very large systems, forestry, the conservatory and the zoo may be carried in the departmental organization as separate divisions with maintenance employees directly under the control of the heads of the divisions.

The following are a few examples of the maintenance personnel in some park systems in the United States, showing the types and number of each type of employees and the rate or rates of pay at the time the statistics were collected (1925):

EXAMPLES

Population of city approximately 900,000. Area of parks approximately 2,225 acres, majority of which is improved.

Maintenance Employees

11 senior park foremen receiving from $1,800 to $2,100 per year.
4 junior park foremen receiving from $1,560 to $1,620 per year.
1 chief gardener, $2,400 per year.
1 zoo keeper, $1,800 per year.

Shop Employees

1 foreman of mechanics, $3,000 per year.
1 carpenter foreman, $1.37½ per hour.
3 carpenters, $1.25 per hour.
1 painter foreman, $1.30 per hour.
8 painters, $1.25 per hour.
3 electricians, $1.50 per hour.
2 truck drivers, $5.00 per day.

Street Tree Employees

2 wardens, $5.50 per day.
7 sprayers, $5.00 per day.
4 gardeners, $4.50 per day.
17 gardener-laborers, $4.00 per day.

Comfort Station Caretakers and Watchmen

3 caretakers, women, receiving $1,080 per year.
4 caretakers, men, receiving from $1,200 to $1,320 per year.
7 watchmen, $4.00 per day.

Bathhouse Caretakers, Watchmen and Laborers Four Centers

23 caretakers, women, $3.00 per day.
4 watchmen, $4.00 per day.
14 laborers, $4.00 per day.

Recreation Maintenance Employees

1 foreman, $135 per month.
4 laborers, $4.00 per day.
1 laborer at dance hall, $4.00.
1 matron at dance hall, $2.00 for each evening and $1.50 for matinees.

General Laborers

190 laborers: 6 of these, specially high-grade laborers and gardeners, receive $5.00 per day; 2, $4.75; 18, $4.50; 3, $4.25; and 161, $4.00 per day respectively.

While the report did not show whether some of these laborers were used on construction work or not, no doubt that is the fact.

Population of city approximately 800,000. Area of parks approximately 2,900 acres, the greater per cent of which is improved.

Maintenance Employees

5 district superintendents, each receiving $2,400 per year.
3 assistant district superintendents, receiving from $1,450 to $2,080 a year.
3 head foremen, one each in the three larger districts. Rate of pay from $1,300 to $1,456 a year.
9 gang foremen each receiving $1,092 a year.
3 head gardeners, one each in the three principal districts, each gardener receiving $1,456 a year.
11 gardeners, each receiving $1,092 a year.
20 park keepers, one receiving $1,144; 17, $1,040; and 2, $988 a year respectively.
4 field keepers, three receiving $1,092 a year each, and one, $1,201.
3 toilet keepers, each receiving $972 a year.
12 women attendants receiving from $275 to $686, the majority receiving $572 a year.
2 janitors receiving $915 each.
1 head carpenter, $2,080.
6 carpenters, each receiving $1,716 a year.
1 boss painter, $1,352.
4 painters, $1,248 each a year, one painter in each of four districts.
1 blacksmith, $1,196.
1 shop man serving all parks, $1,300.
1 machinist serving all parks, $1,472.
1 plumber serving all parks, $1,560.
1 electrician serving all parks, $1,528.
2 assistant electricians, $1,196 each.
2 steam engineers, $1,300 each.
3 assistant engineers, $1,092 each.
1 engineer and chauffeur, $1,300.
1 stable boss, $1,201.20.
6 stablemen, three in one park and one each in three other parks, $1,119.56.
5 utility men, $1,248 each.
6 machinist chauffeurs serving all parks, $1,098.24 each.
1 head animal keeper, $1,456.
3 assistant animal keepers, $1,092 each.
176 laborers distributed among the various districts. Each laborer receives pay at the rate of $1,000 a year.

Population of city approximately 430,000. Park area approximately 4,800, 90 per cent improved. Approximately 1,250 acres of water.

Maintenance Force

4 foremen employed year round, $5.20 to $6.00 per day.
43 park keepers employed from six to ten months, $5.20 to $6.00 per day.
6 janitors employed year round, $4.40 to $4.80 per day.

1 matron year round, $3.85 per day.
90 laborers, two employed year round, eighty-eight from 6 to 9 months. All paid $5.00 per day.
1 horticulturist, $3,600 per year.
2 florists employed year round, $5.50 to $6.00 per day.
1 laborer employed year round, $5.00 per day.

Repair Shop Employees

1 chief mechanic, $8.80 per day.
1 mechanic, $8.00 per day.
1 blacksmith helper, $5.50 per day.
1 utility man, $5.50 per day.
All these men are employed the year round.

Population of city approximately 350,000. Area of parks approximately 2,600 acres.

Maintenance Employees

1 assistant superintendent in direct charge of maintenance, $3,800 a year.
23 park custodians or caretakers receiving salaries ranging from $1,020 to $1,800 a year. Seven of these custodians are in service only about eight months of the year. Four are provided with dwellings free.
1 horticulturist and designer, $2,500 a year.
1 chief florist, $2,000.
1 assistant florist, $1,600.
5 florists, $1,500 each.
1 nursery man, $2,400 a year.
1 shop foreman, $1,872.
6 other shop workers employed year round, $0.60 an hour.
1 storekeeper, $1,800.
1 assistant storekeeper, $1,200.

Recreation Maintenance Employees

1 foreman, $1,800.
2 custodians at community centers, one at $1,080 and one at $1,800 a year.
2 matrons at community centers, $720 a year each.
13 janitors at school playgrounds, one at each ground part time, $35 a month each.
12 watchmen, ten receiving $60 a month and two, $3.50 a day. Part time employees.
75 laborers, approximately, employed the year round. During summer labor force increased to approximately 250. The majority of these summer laborers are used, however, on construction work rather than maintenance. Foremen receive $0.50 an hour, and laborers $0.45 an hour, 8 hours constituting a day. Truck drivers and motive engineers receive $0.60 an hour. Teams with driver receive $0.80 an hour.
13 watchmen employed during winter months receive $3.50 a day.

Population of city approximately 212,000. Area of parks 1,350 acres, 75 per cent improved.

Maintenance Employees

5 foremen, $6.00 a day.
14 park caretakers, $150 a month each.
50 laborers, average year round, 200 in summer, $0.50 an hour.
1 chief florist, $160 a month.
4 gardener-laborers, $0.55 an hour.

Tourist Camp Employees

1 foreman, $25 a week and room.
1 matron, $28 a week.

Recreation Maintenance Employees

18 caretakers, $25 a week.

Zoo

1 animal keeper, $100 a month and house.

Shop Employees

1 foreman, $175 a month.
1 electrician, $150 a month.
1 painter, $44 a week.
1 painter, $42 a week.
2 carpenters, $44 a week each.
2 mechanics, $36 a week.

Population of city approximately 190,000. Area of parks approximately 4,000 acres, of which about 870 acres are improved and 3,130 acres are partially improved. There are 1,811 acres in water.

Maintenance Employees

1 assistant superintendent having direct charge of maintenance, $3,600.
19 foremen, $1,140 to $1,800 a year.
20 laborers employed year round. Approximately 30 additional laborers employed during the summer months, $3.20 a day.
1 chief florist, $2,100 a year.
1 gardener, $1,200 a year.
1 superintendent of forestry, $1,800 a year.
2 laborers, one at $3.20 a day and one at $4.00 a day.

Population of city approximately 110,000. Area of parks approximately 2,200 acres, of which 1,605 acres are improved. There are twenty-five improved parks and nine improved playgrounds.

Superintendent has direct charge of maintenance.
2 foremen, $5.50 a day.
20 laborers, average year round, 60 in summer, $4.50 a day.
10 caretakers employed part time, $5.00 a day.
7 caretakers of playgrounds employed five months, $4.50 a day.
1 florist, $5.00 a day.
2 motor vehicle drivers year round, five in summer, $5.00 a day.
Carpenters and repair men employed as needed.

Population of city approximately 90,000. Area of parks approximately 182 acres, practically all improved. Climatic conditions require constant maintenance.

Superintendent has direct charge of maintenance.
1 foreman, $1,500 a year.
22 laborers year round, $2.50 to $3.00 a day.

Population approximately 76,000. Park area approximately 580 acres. Approximately 435 acres improved.

Maintenance under direct control of superintendent and assistant.
2 foremen, $2,200 each a year.
6 to 65 laborers, $0.50 to $0.65 an hour.
1 gardener, $0.65 an hour.

Population approximately 67,000. Park area 224 acres, practically all improved.

Superintendent has direct charge of maintenance.
1 foreman, $1,800 a year.
18 laborers, $0.50 to $0.60 an hour.
2 shop men, $120 a month each.

As a rule the maintenance organization in all cities under fifty thousand comprises a foreman and a few laborers under the direct control of the superintendent, or the superintendent may act as foreman with the laborers directly responsible to him. Occasionally the maintenance personnel may include a gardener and a mechanic.

Employment.

It is a principle of good business organization that the official responsible for the execution of any particular project or function shall have the authority to select and discharge his subordinates. If this principle were strictly applied to the subordinates in the maintenance personnel, the superintendent or assistant superintendent or superintendent of maintenance should have this authority, and he should be held strictly accountable by the governing authority for results.

In actual practice few executives in charge of maintenance work actually exercise freely this power of hiring and firing. The authority for employing a given number of men, of course, rests always with the governing board or commissioner or director, as the case may be. Very often these various governing authorities also exercise the right to employ the individuals. In most of the large cities public employees of all grades are under civil service, and when the executive is authorized to employ a given number of maintenance workers he must make requisition on the civil service board which supplies the request from the available candidates on its lists. Special rules of the civil service board govern the employment of occasional or part-time workers. On the whole, if the work of the civil service board is efficiently conducted, this method of employment is fairly satisfactory. The worst possible evil that can befall a maintenance executive in employment is politics. The maintenance force of park departments is too often made the dumping ground of political appointees who may be unqualified by reason of age, lack of experience and training, or by indifference to the work. They owe no allegiance to the maintenance executive and hence may give very little heed to his authority. Inefficient main-

tenance work is the inevitable result. This system also may result in the employment of more workers than the necessities of the work require.

Personal Relations.

The general subject of the relation of executives to subordinates has been discussed briefly in the Chapter on the "General Executive Organization," pages 542–547. Every maintenance employee is entitled to have from his directing executive specific instructions as to duties to be performed. These instructions should not only include specific directions as to the details of the work but also the relations which the employee bears to the executive heads of other divisions (in large systems), and to the general public. Inasmuch as maintenance employees come more or less into constant contact with operative executives and employees and the work of the latter depends largely upon the condition of the areas and all the facilities thereon, there must be the closest possible harmony between these two classes of employees. Likewise park caretakers, gardeners and foremen are more or less in constant contact with the public and the impression that the public will gain of the quality of the park service will likely be much influenced by the attitude, diligence and efficiency or lack of efficiency of these employees. It is not expected, of course, that maintenance employees give a great deal of time to the visiting public, but whenever the occasion arises the attitude of the employee should be courteous and helpful.

Reports Relating to Personnel.

Time reports. A careful time record of the work of each employee should be kept. In the small systems this is usually done by the superintendent of the department. In the larger systems time report records are kept by foremen or other responsible persons in charge of men. These time reports should be recorded daily, but the forwarding of them to the administrative office may be daily, weekly, bimonthly or monthly. The better practice is to turn them into the administrative office daily so that there will be no delay in making up the payroll. Some systems use an ordinary post card with the blank form or forms printed on the back, which the foreman can fill out at the close of each day and mail to the office. The form should show the date, name, rate of pay, hours of work, location and character of work. They may be on a card as indicated above, on single form sheets, or in bound book form. These time reports are the basis of the payroll compilation and of cost distribution.

Payroll reports. These are compiled in the office by the superintendent, the secretary or by a time clerk from the time reports. The compilation may be made weekly, bimonthly or monthly. After the payroll has been passed by the governing authority, payment of wages or salaries due

employees may be made immediately. Each employee signs his name opposite the amount due him and receives his pay either in cash or by check. Some park systems use the wasteful method of requiring each employee to call at the office to receive his pay. In others, payment is made by the superintendent, or the secretary, or the paymaster, in the field wherever the employees happen to be. This is the better and more economical method. From the standpoint of possible loss through robbery of the pay-car, payment by check is the much safer method; but where persons are employed who are ignorant of banking methods, payment in cash is a greater convenience to them.

Efficiency rating reports. In those park systems operating under civil service, reports of the rating of each employee is required from time to time, usually monthly. In the maintenance and repair division of the South Park Department, Chicago, the efficiency factors considered include: quantity of work, quality of work, deportment, time and punctuality and subordination. For the different types of workers maximum values are given each factor, the whole totalling 100. Perfection is rated at 100; unusual excellence, 90; excellent, 88; very good, 85; good, 83; average efficiency, 80; unsatisfactory, 75 (pay should be reduced if below 75); incompetent, 70 (should be removed if below 70). These reports are made by the foremen or managers on monthly report forms provided for this purpose. These efficiency ratings are important from the standpoint of wage or salary increases or decreases, transfers, promotions or discharges and no doubt tend to tone up the morale of the employees.

Accident reports. In those states where industrial compensation laws are in force and where public employees are included within the provisions of the laws, it becomes necessary for the park departments to keep careful records of each and every injury to an employee. The Minneapolis Park Department uses an accident report form, which includes the following items: name of person injured, address, date and hour of injury, place of accident, how long was injured at work on this crew, nature of injury, where taken after the accident, how did the accident occur. The report is signed by two or more witnesses and by the person making the report. This report is required to be made immediately after the accident. The park department also uses a form prepared by the Industrial Commission of Minnesota. This form comprises twenty-eight different questions and must be returned completely filled out within forty-eight hours in the case of a fatal or serious accident, otherwise on the seventh day after injury or disability occurs. Other forms prepared by the Industrial Commission and used by the department include partial payment receipt form, and final receipt for compensation paid under compensation agreement and award.

Every park department, whether acting under an industrial compensation law or not, should keep a careful record of any injury incurred by an employee while in service for use in case of subsequent legal proceedings by the employee against the department. It may be noted, also, that it is equally important to keep a careful record of injury sustained by any visitor to the parks and for the same reason.

Maintenance Equipment.

A third important factor in efficient maintenance is proper equipment. By equipment is meant not only machinery and tools but also live stock

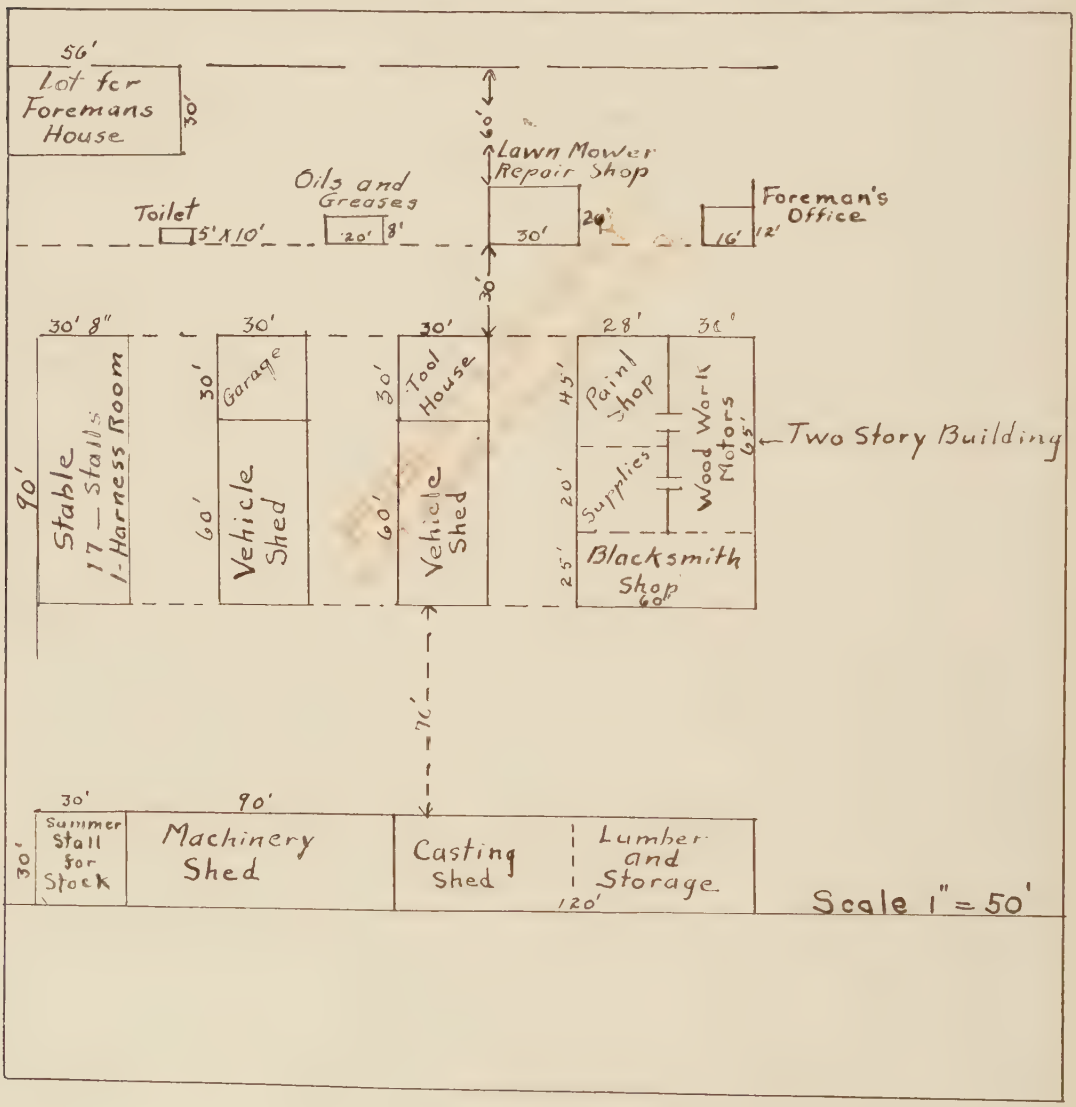

PLATE NO. 243

PLAN OF THE LAYOUT OF A SERVICE AREA, PARK DEPARTMENT, SAVANNAH, GEORGIA

used for motive power; materials and supplies and structures such as barns, machinery and tool sheds, shops and storage houses.

Service Areas.

Some park departments have adopted a policy of having a central service area comprising storage yards, sites for structures designed for different purposes, driveways and general purpose spaces. On page 654 is an example of such a service area developed within recent years by the park department of Savannah, Georgia.

In Racine, Wisconsin, the park department has set aside a centrally located area comprising about three acres as the headquarters for maintenance activities. The single structure on this area is a combined barn, storehouse and workshop.

This service park comprises 18.064 acres. Eight acres are landscaped and the remainder devoted to shops, barns, storehouse, yards, greenhouses, floral display garden and certain active recreation features.

Many park departments have adopted the plan of locating the maintenance headquarters, including sometimes also the operating headquarters, in some one of the large parks of their respective systems, and many have subsidiary stations in other parks in addition. The disadvantage of

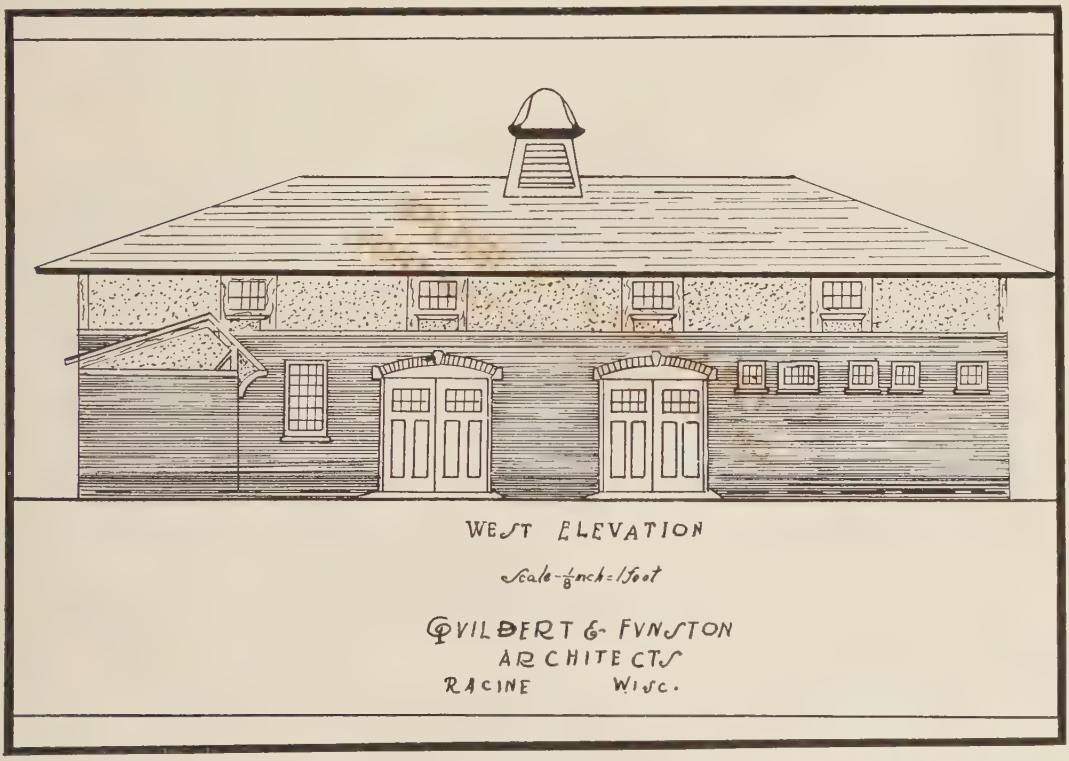

PLATE NO. 244. BARN AND REPAIR SHOP, PARK DEPARTMENT, RACINE, WISCONSIN

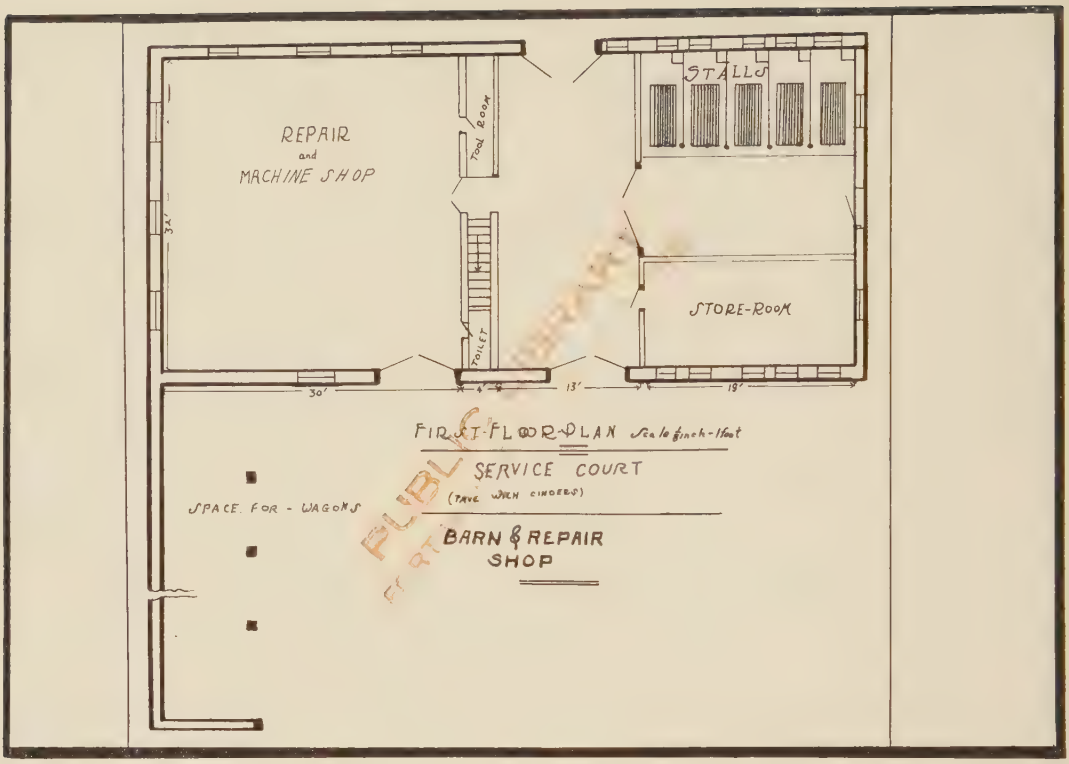

PLATE NO. 245

FLOOR PLAN, BARN AND REPAIR SHOP, PARK DEPARTMENT, RACINE, WISCONSIN

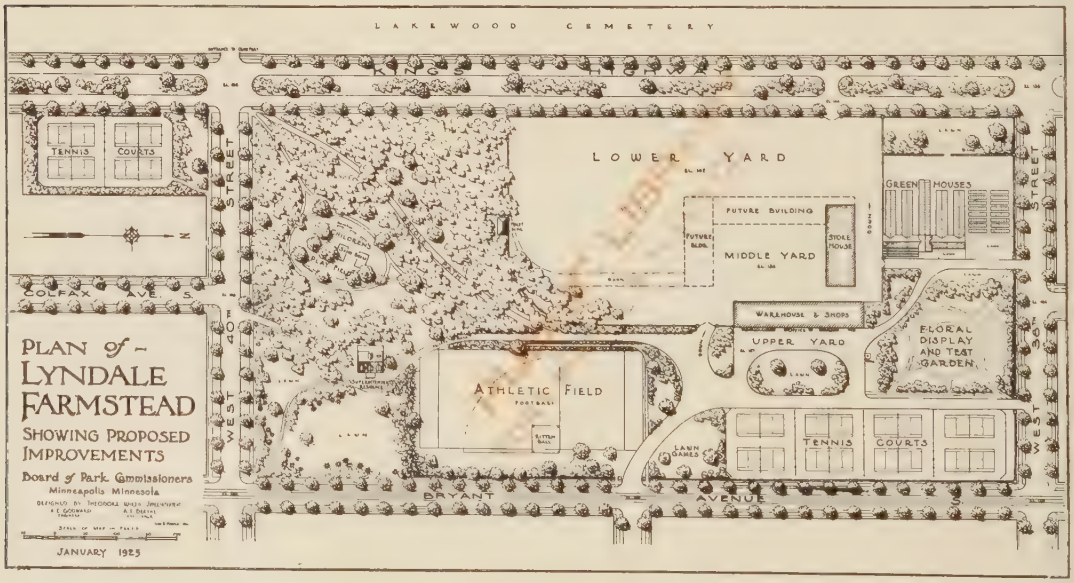

PLATE NO. 246

PLAN OF LYNDALE FARMSTEAD, A SERVICE AREA IN THE MINNEAPOLIS PARK SYSTEM, MINNEAPOLIS, MINNESOTA

locating the maintenance headquarters in a large park is that large parks acquired in recent years at least are usually not centrally located with respect to other units of the system and it is difficult to embody a service area in the landscape design of such parks. However, the frequency with which this plan is met in the park systems of the country indicates that it is of practical value. Examples of maintenance headquarters located in large parks are to be found in the Bronx Park, Bronx Park System, New York, Franklin Park in Boston, Delaware Park in Buffalo, Forest Park in St. Louis, Forest Park in Springfield, Massachusetts, Fairmount Park in Philadelphia, Shawnee Park in Louisville, Branch Brook Park, Essex County Park System, New Jersey and Warinanco Park, Union County Park System, New Jersey. The operating headquarters are also included.

In large park systems and especially in county park systems the necessity for subsidiary service areas and structures for the housing of live stock, storage of feed, machinery and tools is obvious. In a park system of any size it is desirable to have some storage facilities on each area that is intensively used. This may consist of a waterproof box for the storage of playground supplies such as is commonly found on many playgrounds, or it may be a room under a band stand, in a comfort station, shelter house, or other structure in the park, where the caretaker can house tools and machinery that are in constant use and where he can keep small quantities of supplies.

In a few cities the development of a central municipal service station has done away to a considerable extent with the necessity of the park department maintaining a service center. Thus in those cities having a centralized purchasing department with large storage yards and houses, all materials and supplies can be gotten directly by the park department through this center. Again, cities having municipal shops handle all the minor construction work, repairs to machinery, sharpening of mowers and tools and similar tasks for the park department. A few cities have large municipal garages where all park department motor vehicles and machinery are cared for and from which all motor supplies are secured. In the smaller cities this is perhaps the most economical manner of handling the problems of maintenance equipment, materials and supplies.

Maintenance Structures.

Maintenance structures include such structures as dwelling houses for foremen or caretakers, barns, shops, machinery sheds, storehouses, propagating greenhouses and propagating beds or frames.

Dwelling houses. The practice of providing dwelling houses for foremen or caretakers in the principal parks of a system is quite common

throughout the country. These dwellings may be new structures erected specifically for the purpose or they may be old dwellings that happened to be on the property when purchased. This practice has the advantage of always having some one in authority on the premises and is frequently a means of supplementing the meager salaries of the men, as the houses are usually given rent free and often with free fuel, light and water in addition. In not a few park systems the general superintendent is also furnished a house, usually located in one of the principal parks. The danger in providing dwellings for foremen or caretakers is that it often becomes more difficult to transfer them when deemed necessary, and as a general principle of management it is quite desirable to shift general foremen and caretakers from time to time. In county park systems, where the parks are located in rural districts and somewhat widely separated from each other, a resident employee is highly desirable. The same may be said with respect to various units of metropolitan park systems of cities.

Barns. Barns are not so important a type of service structure as they were fifteen or twenty years ago, but inasmuch as many park departments still use horses or mules for motive power to some extent barns are met with frequently and new ones are being erected from time to time. They may be a unit among the structures on the central service area or combined with a shop or storehouse or in a structure including all three facilities, or they may be separate structures located in some of the principal parks of the system as subsidiary services stations.

On page 659 will be found an illustration of a barn erected in O'Fallon Park, one of the parks of the St. Louis Park and Recreation System. It shows a barn combined with shop and storage facilities.

In the construction of barns, stall space eight by ten feet should be provided for each animal. It is quite common to arrange the stalls on either side of a central passageway ranging from a width of a few feet sufficient for feeding purposes only to a width sufficient to allow a wagon to pass through for unloading feed or for removal of manure. The left space will be determined by the height of the building. At least from ten to twelve feet head room should be allowed for the stalls. A harness room, feed bins, a composting pit and a corral are other desirable features connected with the construction of barns.

Shops. Many park departments rely upon outside commercial shops for repairs to machinery, tools, recreation equipment and supplies and for repairs to structures. Unless the system is a very small one this method is likely to be wasteful both of time and money. Any park department that has grown to such a size as to have a goodly supply of machinery,

tools, recreation equipment and structures of various kinds should have a well-equipped repair and construction shop. Some of the advantages of having a repair and construction shop are:

(*a*) Repairs and minor construction work can usually be done as soon as the necessity arises without loss of valuable time and done more economically than if farmed out to outside shops.

(*b*) In the smaller systems it provides a means of holding the year round some men competent to handle repair and minor construction work who otherwise would have to be dropped when the busy outdoor season is over. In the larger systems competent men whom it is desirable to retain as permanent employees can likewise be given employment at off seasons.

(*c*) It enables a thorough overhauling of all machinery, tools, equipment in structures, the structures themselves and recreation equipment during the off season from outdoor work, so that with the opening of the active outdoor season the following year all service equipment will be in first class condition for the use of the public.

(*d*) A great deal of original construction work can be done economically in the department shop or shops, such as the making of park benches,

PLATE NO. 247

BARN IN O'FALLON PARK, PARK AND RECREATION DEPARTMENT, ST. LOUIS, MISSOURI

signs, playground apparatus, concrete posts, light standards and other forms of concrete work. This can be done at all times where a permanent shop force is maintained and during the off season where certain competent men who are on outside work during the open season are retained the year round. A repair shop is often included as a part of a structure used for other purposes and may be in a separate structure or different divisions of the shop may be in different structures. This is determined, usually, by the size of the system and by the extent to which the department enters into its own repair and minor construction work. The example of Racine, Wisconsin, page 655, shows a combined barn and shop. In Davenport, Iowa, the shop is located in a structure that is partly devoted to a golf clubhouse. (See Chapter IV, page 158). In St. Louis there is more than one structure devoted to repair and construction work.

In large systems the repair and construction work may be divided among several distinct shops, as, for example, a carpenter, paint, blacksmith, machine, electrical, concrete, automobile, wagon shop, respectively, each in charge of a foreman skilled in his particular trade, the whole, however, being conducted as a unit under the general supervision of the superintendent, or an assistant superintendent, or a superintendent of maintenance. As a general rule these various divisional shops occupy space units in a single structure, although in some instances some of the divisional shops may be housed in separate structures.

Examples of shop equipment. The small shop at Racine, Wisconsin, is equipped with a good machine lathe, drill press, large grinding stone, emery wheel, a fourteen-inch circular saw, a band saw, a planer, a forge, a good workbench and adequate hand tools. All machinery is operated by electricity. This shop is deemed adequate to handle the necessary repair and minor construction work for a park system such as a city from fifty to one hundred thousand might have. It would appear, however, that park departments in smaller cities might find this minimum equipment needful.

The following is an inventory, as of 1925–1926, of the Minneapolis Park Department shop equipment, together with the price of each item:

SHOP EQUIPMENT

	Price	*Amount*		*Price*	*Amount*
2 Chisels, turning	$20.00	$40.00	1 Machine, punch and shear	$320.00	$320.00
1 Crane, portable	100.00	100.00	1 Machine, press, Manly 22-ton	125.00	125.00
1 Compressor, air	200.00	200.00	1 Motor, electric, ⅛ h.p.	18.00	18.00
1 Clock, wall	9.00	9.00	1 Motor, electric, ½ h.p.	36.00	36.00
1 Forge, blacksmith	35.00	35.00	4 Motors, electric, 1 h.p.	45.00	180.00
3 Grinders, bench	25.00	75.00	1 Motor, electric, 1½ h.p.	45.00	45.00
1 Machine, drill press, Barnes	300.00	300.00	6 Motors, electric, 2 h.p.	54.00	324.00
1 Machine, lathe with chuck	400.00	400.00	1 Motor, electric, 3 h.p.	54.00	54.00
1 Machine, hack saw, power, Racine	95.00	95.00	1 Motor, electric, 5 h.p.	67.50	67.50
			3 Motors, electric, 7½ h.p.	135.00	405.00

	Price	Amount
1 set Reamers	$27.00	$27.00
1 Stand, emery	9.00	9.00
11 Tanks, oil, Warne	80.00	880.00
1 Tank, air storage	25.00	25.00
2 Vises, bench No. 56	20.00	40.00
2 Register Turntables	5.00	10.00
1 Pump, gasoline, Wayne	230.00	230.00
1 Machine, "Kwik Way"	514.85	514.85
1 Machine, shaper	450.00	450.00
1 Anvil	10.00	10.00
1 Bellows, hand	.20	.20
2 Bits, auger	.30	.60
1 Tool Box	20.00	20.00
1 Bit Brace	1.50	1.50
1 Can, sprinkling, 16-quart	.80	.80
1 Can, waste	2.00	2.00
3 Chisels, blacksmith	.25	.75
4 Chisels, cold	.25	1.00
1 set Drills, ¼ to ⅞-inch	1.40	1.40
1 set Drills, 1⅛ to 1¼-inch	1.25	1.25
2 Drills, ratchet, 10-inch	2.00	4.00
1 set Dies	6.00	6.00
1 Extinguisher, fire	8.00	8.00
2 Flatters, blacksmith	.20	.40
1 Grinder Machine	40.00	40.00
2 Grease Guns	1.00	2.00
1 Claw Hammer	.70	.70
3 Hammers, blacksmith	.70	2.10
1 Hammer, striking, 10 lbs.	1.10	1.10
2 Hammers, striking, 14 lbs.	1.50	3.00
1 Hammer, striking, blacksmith, 10 lbs.	1.00	1.00
1 Hammer, machinist	.45	.45
1 Hammer, riveting	.30	.30
2 Hard Dies, blacksmith	.20	.40
100 feet Hose, ¾-inch, Water	.12	12.00
1 Indicator, speed	.40	.40
1 Iron, branding	2.00	2.00
1 Jack Screw	1.60	1.60
1 Knife, draw	.75	.75
1 Ladder, 10-foot taper	2.00	2.00
1 Machine, electric portable drill	67.50	67.50
1 Machine, electric valve	50.00	50.00
1 Machine, pipe tread	$90.00	$90.00
1 Machine, power hammer	30.00	30.00
1 Machine, bending iron and shear	30.00	30.00
1 Machine, riveting	1.00	1.00
1 Machine, tire shrinker	25.00	25.00
1 Machine, welding	60.00	60.00
1 Mallet, wooden	.30	.30
1 Micrometer, inside	4.00	4.00
1 Machine Grinder, lawnmowers	175.00	175.00
1 Nozzle, ¾-inch	.25	.25
4 Oilers	.10	.40
3 Pails, galvanized iron	.75	2.25
1 Plate Screw	20.00	20.00
2 Pliers, 6-inch	.25	.50
2 Plungers, p. f.	.30	.60
2 Saws, hack	.75	1.50
1 Saw, carpenter	1.50	1.50
3 Screw Drivers	.20	.60
1 Band Saw, set narrow	10.00	10.00
1 Settee, 4-foot	2.25	2.25
1 Shovel, stable	.75	.75
1 Set Steel Stamps	2.00	2.00
6 Swages, top and bottom	.25	1.50
1 Tank, oil storage	25.00	25.00
6 Tongs, blacksmith	.50	3.00
1 Torch, Everhot	28.75	28.75
4 Vises, bench	10.00	40.00
1 Vise, pipe	6.00	6.00
1 Wheelbarrow, dump	3.50	3.50
2 Wrenches, 15-inch B. & C.	1.00	2.00
3 Wrenches, crescent	.80	2.40
1 Wrench, monkey, 8-inch	.40	.40
1 Wrench, monkey, 10-inch	.50	.50
1 Wrench, monkey, 12-inch	.60	.60
1 Wrench, monkey, 18-inch	.90	.90
1 Wrench, pipe, 8-inch	.60	.60
1 Wrench, pipe, 14-inch	.90	.90
1 Wrench, pipe, 18-inch	1.00	1.00
1 Wrench, pipe, 24-inch	1.50	1.50
1 Wrench, set snap on	25.00	25.00
		$5,861.50

Machinery, wagon and tool sheds. To protect all the different kinds of machines, vehicles and tools used in park maintenance from exposure to weather and from theft, is of very great economic importance. The deterioration of machines, vehicles and tools from constant exposure to the action of the elements is almost as great, if not greater, than from their use. Things that can be carried away, if left unhoused when not in use, will surely disappear, since public property is generally looked upon as anybody's property. In all properly constructed central service areas, sheds or spaces within larger structures are provided for housing all equipment when not

in use in some part of the system. Inasmuch as the central service area should be surrounded by an enclosure, it frequently happens that sheds can be constructed so as to form part of the enclosure, the open front facing the central court or yard. The necessity of having storage facilities for supplies and tools that are in use on individual areas has already been mentioned.

Storehouse. In its broadest sense storehouse includes not only a structure for housing the innumerable smaller articles needed in maintenance, but also tool and bulky material sheds, and storage yards. As considered here storehouse is a structure used primarily for handling the smaller articles used in maintenance work, either new articles or old articles that are being constantly returned and reissued as the need for them arises. Any park department that has been in operation for several years learns what type of materials, tools and supplies it needs and about the quantity of each type that will be necessary yearly. If this kind of information has been collected, it shows poor business judgment to purchase from hand to mouth when known quantities can be purchased in wholesale lots and at wholesale prices. The only serious objection to this principle is that in times of rapid changes in prices a park department might presumably make the mistake of paying too high a price even in wholesale lots at the beginning of a year for articles which might be bought more cheaply later. As a rule, however, it is more economical to purchase at wholesale than from hand to mouth. If the plan of purchasing in quantity is followed, a storehouse for the proper care of the articles becomes a necessity. In any case, for the proper handling of equipment and supplies already owned by the department, a central storehouse is necessary.

Many park departments have made the mistake of not constructing their storehouses large enough, thus making it exceedingly difficult to classify and arrange the articles properly. It is always far better to have more room than is really necessary than to have too little. The interior equipment of a storehouse should include as many bins as there are small articles of the same kind to be stored; shelves for the storage of cans and other articles that do not require large space yet cannot well be kept in bins; racks for hand tools; frames for storage of lumber, pipe and other articles which can thus be most conveniently stored; large open space or spaces for bulky equipment and supplies, and office for the storekeeper, etc. Highly inflammable or explosive material or supplies should be kept in a structure or receptacles entirely outside the storehouse proper and a safe distance from it. The entire interior arrangement of the storehouse should be designed with a view of ease in finding and getting at the articles desired.

At every bin or place where articles of the same kind are stored it is

desirable to have a perpetual inventory card showing for any given period of time the original number of articles, the removals, renewals and the quantities on hand. This card should also indicate the maximum or minimum number of articles of the kind it is desirable to have on hand at all times. This perpetual inventory card does not, of course, do away with the necessity of the storekeeper and the secretary in the administrative office keeping the necessary book property records.

Greenhouses. In the Chapter on "Horticulture," page 670, Mr. Mulford notes that "in park departments with a maintenance fund of less than $50,000 or less than $100 per acre or $1.00 per capita, the expense of maintaining a greenhouse is seldom warranted. If $50,000 provides maintenance in excess of $100 per acre and $1.00 per capita of the people to be served by the park system, a greenhouse may sometimes be justified."

This observation suggests the point at which any given park system may be warranted, economically, in providing a greenhouse or houses as a part of their maintenance equipment. There are a number of examples throughout the country of small park departments erecting and maintaining greenhouses where the cost of erection and maintenance is out of proportion to general maintenance resources and where it would have been more economical to have purchased some of the plants needed, grown others in hotbeds or cold frames, or used more types of plants that can be successfully grown without any preliminary propagating aid.

The following notes and illustrations on horticultural buildings are taken from an excellent article on the subject by L. W. C. Tuthill in *Parks and Recreation*, Vol. VIII, No. 6, July-August 1925.

Planning. In planning the greenhouse be sure to give it space enough so additions can be made economically. Locate the boiler so that with subsequent additions it will continue to be in a central location and the heating pipes can have a balanced distribution. Do not skimp on the size of the boiler or the amount of radiation.

Location. Select a spot away from trees and buildings so as to secure all available sunlight. Run the main axis of the house as nearly east and west as possible so that the sun will travel parallel with the ridge for most of the year, thus giving all the benches the greatest amount of light.

Width. Do not build too narrow. Small narrow houses are not only difficult to ventilate without chilling the plants, but cost more in proportion than larger ones. Twenty-five years ago, the two-bench, one-walk house was thought quite the thing for parks and cemeteries where large amounts of bedding plants were grown. Then came the eighteen-foot width, and now the tendency is toward twenty-five feet and wider. The forty-foot house in length of one hundred feet and up makes a splendid proposition.

Of course some requirements demand several compartments to ensure different growing temperatures, in which case the eighteen, twenty-five or thirty-foot house is doubtless best for general park purposes. When it comes to bench and walk widths, follow the experience and advice of greenhouse experts.

Ridge and furrow versus separate houses. There is much divergence of opinion as to the comparative merits of separate houses as against those built together. Ridge and furrow does make possible better ventilation, but this is offset in snowy sections by the way the snow piles up between the houses, causing shade at just the time of year when light is so essential. For the same amount of money more space can be covered with ridge and furrow houses, but the fact that in most sections of the country there is only one such layout to every ten or more of separate houses indicates that the separate houses are to be preferred.

Construction. In these days the semi-iron or pipe frame and the full iron frame house has taken the place of the all-wood house. The semi-iron (Plate 248) is a thoroughly good house, costing from ten to fifteen per cent less than the iron frame house. As far as growing conditions are concerned there is very little or any difference. The main difference lies in the rigidity of the frame. The semi-iron or pipe frame has no rafters. The roof depends entirely for its support on the added size of the glazing bars and the pipe purlins supported about every eight feet with pipe columns.

The iron frame (Plate 249) is of entirely self-sustaining construction, rigid and strong of itself. The roof bars, serving only as glazing members, can be much lighter and so cast less shade. The semi-iron house must have numerous columns, while even a house seventy feet wide, of iron frame construction, requires only two columns across its width. As a permanent investment, unquestionably, the iron frame is the best type of house. Its upkeep is lower and there is less glass breakage because of its greater rigidity.

Wood. One of the oldest and largest firms of horticultural builders states that, after having experienced and made extensive tests with various woods over a period of close on to three-quarters of a century, it has come to the conclusion that no wood so well meets the demands of combined strength and resistance to rot as tidewater tank cypress, that is sap free. Government statistics bear out this firm's conclusions.

Design. There are three rather distinct designs, one of which is practical for the semi-iron and all for the iron frame type of house. (*a*) For both types of houses the so-called eaves plate design is adaptable. This has an angle iron eave plate at the eave line. To it are secured the roof bars and the side sash hinged. It makes a rigid, enduring eave that casts the minimum shade. (*b*) The iron frame gutter house, which has the same

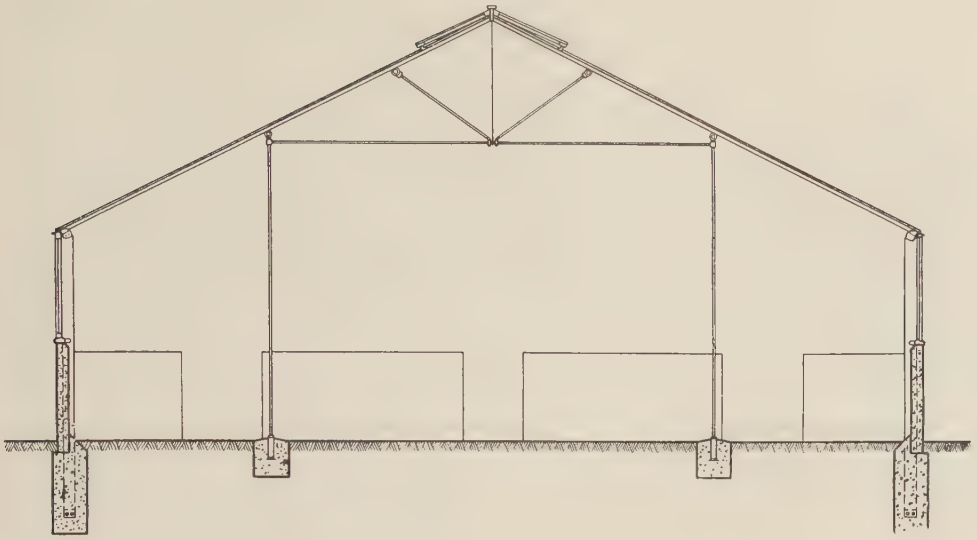

PLATE No. 248. CROSS SECTION OF A TWENTY-FOUR-FOOT BENCH, SEMI-IRON HOUSE

It has two columns. The same width iron frame house would have none. (Cut and design by Lord & Burnham Company.)

straight roof and sides as (*a*), only the angle iron is replaced by an ornamental gutter. Architects consider this the most architectural of the three. However, for the past fifteen years its use has been steadily on the wane. (*c*) This is the iron frame curved eave house which makes use of the same type of gutter as in (*b*), but the curve of the roof above it not only gives a most attractive appearance but increases the roof height over the side benches (Plate 250). This latter is a distinct advantage for the growing of

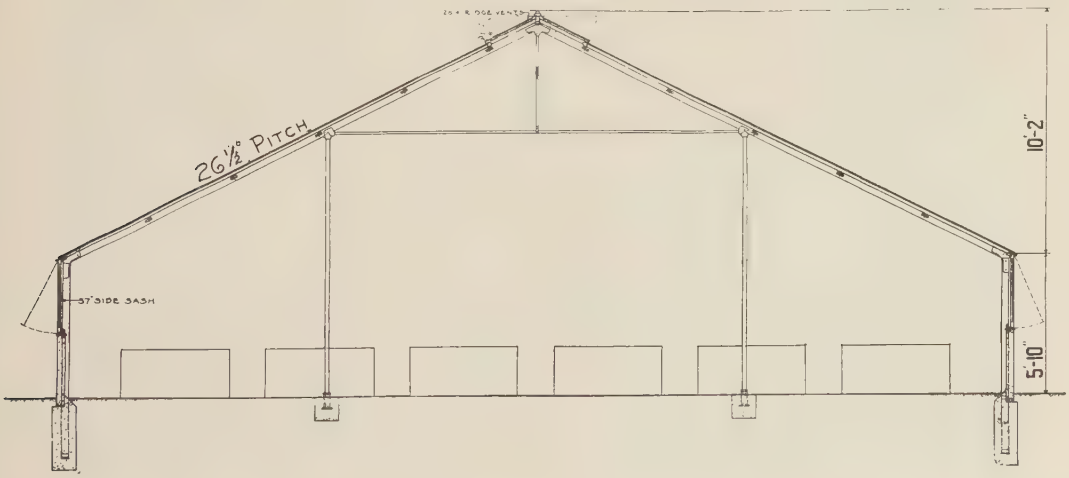

PLATE No. 249. CROSS SECTION OF A FORTY-FOOT IRON FRAME HOUSE

It gives ample space for seven benches. (Cut and design by Lord & Burnham.)

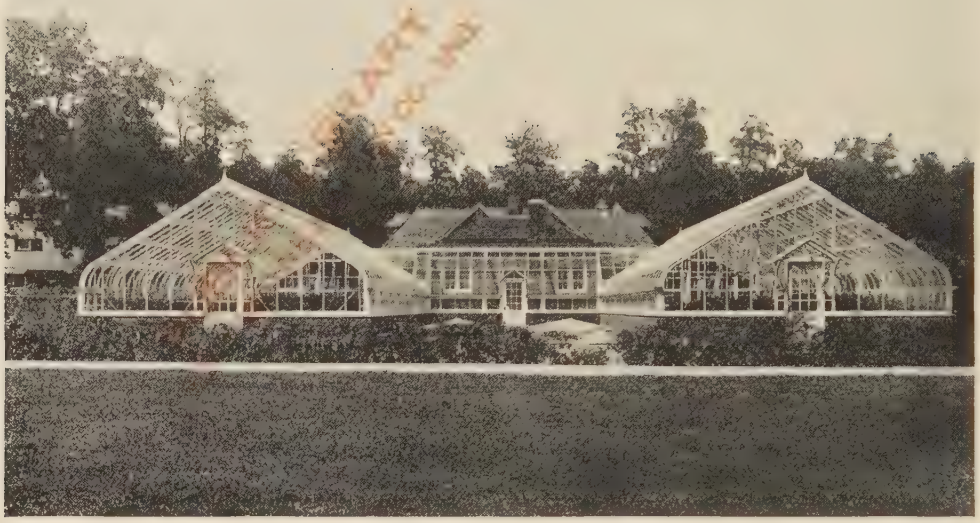

PLATE No. 250. A SPLENDID MODERATE SIZE LAYOUT OF SERVICE HOUSE, TWO GREENHOUSES AND FRAMES

The houses are each twenty-five feet wide and are connected to the service house by a lean-to.

PLATE No. 251. EXTENSIVE LAYOUT OF RIDGE AND FURROW HOUSES

Here is an extensive layout of ridge and furrow houses, such as would be thoroughly practical as to plan and economical as to working and heating.

PLATE No. 252. SEMI-IRON CONSTRUCTION GREENHOUSE

Complete semi-iron construction greenhouse, with inexpensive work room suitable for small parks. The greenhouse portion is eighteen feet wide and fifty feet long. Work room is twelve by twenty feet.

high-headed, long-stemmed plants. Generally the eaves plate design is the practical purpose house of lowest cost. The gutter type meets the inclination of many architects. The curved eave is the most attractive.

Divisions of the design. Of the designs there are two construction divisions relating to the sides and foundation. The posts may be run into the

PLATE No. 253. IRON FRAME CONSTRUCTED HOUSE

Interior view of an iron frame constructed house thirty feet wide and one hundred and fifty feet long, divided into several compartments. A glance shows the quantities of bedding stock this first compartment grows.

ground two and one-half feet below grade and be bedded in concrete, and then run up a curtain wall of concrete from six inches below grade to the sill. This makes a thoroughly practical form of construction and because of its low cost is used generally for the big commercial houses. The other method is to build a regular foundation wall of concrete, brick or stone, running it from the sill to two and one-half feet below grade. On the tip of this wall rests a cast iron sill, to which the side posts supporting the rafters are directly bolted.

CHAPTER XII

HORTICULTURAL DIVISION

SECTION I

HORTICULTURAL ORGANIZATION OF A PARK DEPARTMENT

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The functions of a horticultural division of a park department are fourfold: (1) Design; (2) Production; (3) Installation; (4) Maintenance.

Design. Design includes the selection of plant material to fit the various proposed plant groups on the general park plan and often to locate the groups as well. Where the park designer has not sufficient knowledge of plant material, its uses and requirements, this work falls upon the horticultural division. With a well organized department manned with properly trained executives and designers this phase of the work will be adequately handled in the designing division. If this designing is to be done by the horticultural division a head will be needed who has had adequate training in landscape designing. A florist or gardener who may have planted many grounds but who has not had a thorough training in the principles of design is not competent for such work. At some point there is needed a person trained in the principles of landscape design including a thorough knowledge of plant materials. Whatever the organization there must be close coöperation and understanding between the design division and the horticultural division. Roads, tennis courts and all park features must be located in such manner as to serve efficiently as roads and play areas, and to blend with the landscape. Not only must buffer planting areas be provided to accomplish this, but good lines, which may have no bearing on the efficiency of the road or playground, must be provided in the grading if attractive results are to be secured. The horticultural division will need to know well in advance of planting the material that will be required. The engineering division will need to know the location of plant groups and the soil requirements so that this may be provided while grading is in progress. These mutual understandings require whole-hearted coöperation.

Production. Every park department, however small, needs to produce plants for adding to its decoration. Sometimes it may be only annuals to supplement permanent plantings; sometimes it includes perennials and again it involves woody plants for permanent plantations. Annuals are readily and economically grown and provide temporary results by giving

density to newly made plantings of woody materials or perennials, adding splashes of color here and there to mature plantations and making gardens of their own. These plants are readily propagated in hotbeds and cold frames, while some of them are secured sufficiently early when grown in the open ground. It is probably somewhat easier to handle some of these in a greenhouse when the expense of operating such a structure is warranted, but in park departments with a maintenance fund of less than $50,000 or less than $100 per acre or $1.00 per capita, the expense of maintaining a greenhouse is seldom warranted. If $50,000 provides maintenance in excess of $100 per acre and $1.00 per capita of the people to be served by the park system, a greenhouse may sometimes be justified.

Greenhouses make easy the propagation of bedding stock, either annual or perennial, the planting and care of which is expensive. When the time arrives in the development of the park system for incurring this expense the best of equipment should be secured. Houses ten feet wide and sunk well in the ground are probably best for propagating purposes. The equipment for the propagation of herbaceous perennials consists of beds in the open, some shaded with lath screens or with cheesecloth and lath. A few of these will grow a large number of plants.

Small park systems find it advisable to buy their trees and shrubs; in larger systems there are often advantages in having a stock of the more used plants on hand and available for quickly planting areas of especial prominence, as soon as they are ready, with plants that are in condition to give immediate effect. This is possible by establishing a park nursery. Plants for a nursery may either be purchased as seedlings or rooted cuttings or as plants more nearly ready for permanent planting. These are grown under nursery conditions until needed for permanent planting. Often plants are propagated from seeds and cuttings in the park nursery. If the material propagated is carefully planned for the park needs and too much is not undertaken, such a nursery is often of distinct advantage.

Installation. The horticultural division must be organized to do the necessary planting at the appropriate seasons. The planting of woody plants can much of it be done when other activities are relatively slack. Because there is less work in the fall and because in many parts of the country fall transplanting is more successful, plant moving may often be done at that season. This will naturally utilize the gardeners and propagators who at other seasons are busy elsewhere. Herbaceous borders add much to the floral decoration of parks. They usually require overhauling and replanting every third or fourth year. Many of these plants can be moved near the close of the busiest season in the park. If annuals or bedding plants are used, provision must be made for setting them out in the busy

season. Because of the great expense this entails for temporary effects, such planting should be kept at a minimum, being used only when ample funds are available and where it adds materially to the public interest.

Conservatories for permanent collections of tender plants or for the temporary exhibit of popular flowers are warranted only where large appropriations are available. Careful preparations during many months are necessary for these special shows. The installation of conservatories in a park system should be weighed in the same way as the development of a playground system, the building of an athletic field, the establishment of a zoölogical collection or the construction of an aquarium. The initial cost of such undertakings may seem large but the maintenance is burdensome until the city is really ready to finance them properly from year to year.

Maintenance. The horticultural maintenance of a park system is synonymous with park maintenance over the major portion of the park department. Intensive play areas, the care of much used service buildings and other special features are the only exceptions. The maintenance of the park areas must usually be on a twofold basis, the local and the special. Local maintenance has to do with a man or a group of men maintaining a definite park area while the special maintenance involves a gang of men, usually with special equipment or with special training, who perform a particular kind of work throughout the park system. A spraying gang or a pruning gang is an example of the latter.

The type of park development and the intensity and continuity of use are important factors in determining the character of maintenance. A park with open lawns enclosed by masses of shrubs sufficiently remote from the centers of population to be used only in summer may be maintained at far less expense than a park of formal design or with many flower beds, or one near the business center that is likely to be used almost every day in the year. A park in which natural woodlands and open meadows predominate, in which cutting the grass two or three times a season and cleaning out dead wood constitute the principal items of maintenance, takes but little of the appropriation.

It is probably best to have some one in charge of each unit or separate portion of the park system. The smaller units would be handled by a good workman while larger parks would be handled by a foreman with a gang of men. The area that one man can handle varies with the type of park development and the man. A park of five acres with mass plantings of shrubbery without flower beds, but with the lawns much broken by trees, can often be handled by one man. If most of the ground could be mowed with a power lawn mower a larger area could be tended. A half acre of flower beds is usually all one man can keep in good condition.

A hundred-acre park with lawns not too much cut up by walks and other features and the plantings mainly of tree and shrub masses can often be handled by eight men and a horse or gasoline power equipment for lawn mowing. Rural and woodland parks can sometimes be handled by one or two men per hundred acres in summer and one man to three or four hundred acres in spring and fall. It all depends on the character of upkeep and intensity of use.

In a park system for a small town it is sometimes possible so to organize the work that one set of men goes from park to park doing all the grass cutting, another set does the hoeing, and so on. In the present day of motor transportation this may be the most efficient method. On the other hand there is a protective influence that discourages vandalism if small groups of men are working here and there throughout the parks, which often more than compensates for an apparent lack of efficiency. Alert workmen are often better protectors than police and certainly may be important aids to the police in park protection.

Equipment. The equipment requiring closest scrutiny is the lawn mowers. The basis should be power mowers suited to the size of the areas to be cut, supplemented by just enough sixteen-inch hand mowers to cut about trees, along edges and at corners so that the power machine will not need to jockey at corners to make a clean cut or run too close to trees or plant groups, thus saving time. Only a competent mechanic should ever be permitted to tamper with the adjustments. There should be enough machines at hand so that if one becomes slightly out of adjustment another is available until the mechanic has a chance to make the repairs. The workmen usually hurt rather than help a machine.

Another expensive item of equipment is the spray outfit. For tree spraying, whether on city streets, in parks or in forests, a strong pump is essential, one that can create a pressure of two hundred pounds per square inch at the nozzle. For the spraying of low shrubbery a much lower pressure is better. For spraying, the unit organization for the park system is probably best, even if the street trees of the city are included under the park administration.

As nearly a central location as possible should be selected for an administration unit where housing should be provided for trucks and automobiles as well as spray outfits, lawn mowers and small tools of all kinds. Repair shops may often be in common with other divisions of the department. The propagating grounds should be near at hand. When there is a show conservatory it should also be close by, if practicable, but the work yards need to be well screened from the other portions of the parks.

There should be trained men to head each of the following lines:

General maintenance:
- Lawns.
- Shrubbery plantings.
- Trees, including street plantings.
- Gardens.
- Show greenhouses.

Installation:
- Lawns.
- Woody plants.
- Gardens.
- Bedding.
- Greenhouse exhibits.

Propagation:
- Temporary material:
  - Annuals.
  - Bedding plants.
  - Greenhouse shows.
- Permanent material:
  - Herbaceous perennials.
  - Deciduous trees and shrubs.
  - Cone-bearing evergreens.
  - Broad-leaf evergreens.

In a small park system two or three men will head all of these lines. Much of the installation or new plantings may be done at seasons of the year when maintenance or propagation work is not pressing. Competent, although apparently high-priced help, should be given to all these leaders. Extravagance often occurs in park systems by employing men untrained in the particular lines of work to which they are assigned. It is frequently assumed that because a man has been successful in more or less closely allied work, he is able to take up any of these lines. Such an experience is valuable, providing the rudiments upon which the necessary structure may be built, and often contributes towards the training necessary for efficient work.

SECTION II

NOTES ON DIFFERENT GROWING REGIONS OF THE UNITED STATES, TOGETHER WITH LISTS OF HERBACEOUS PERENNIALS AND ORNAMENTAL SHRUBS AND TREES BEST ADAPTED TO EACH REGION[1]

The United States presents a great variety of growing conditions. Some of the perennials and ornamental trees and shrubs are adapted to many of these conditions, others to but a few. In order to make these variations as intelligible as possible a map (Plate 254) has been prepared in which the areas with approximately similar growing conditions are specified by numbers with heavy border lines. In the following pages the general characteristics of these regions are discussed. This is followed by a table showing in which of these regions certain specified perennials may be expected to thrive, and by a table showing in which of these regions specified ornamental shrubs and trees may be expected to thrive. The section closes with some notes on lawn grasses.

[1] The material in Section IV was prepared by the Bureau of Plant Industry of the United States Department of Agriculture. That part of the section dealing with herbaceous perennials originally appeared in Farmers' Bulletin No. 1381, "Herbaceous Perennials," by Furman Lloyd Mulford, issued May 1924. That part dealing with ornamental shrubs and trees and grasses is a part of an Extension Handbook issued September 1927.

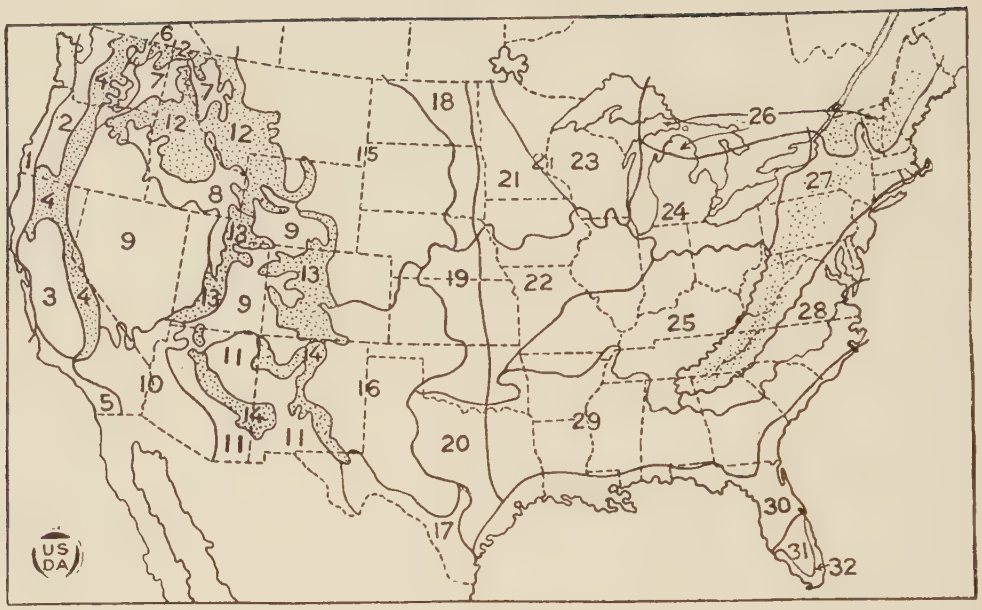

PLATE NO. 254

MAP SHOWING REGIONS WITH SIMILAR GROWING CONDITIONS

Region 1 includes the whole North Pacific Coast from below Santa Cruz Bay to the Canadian line. Its characteristics are cool, dry summers with frequent fogs and heavy winter rainfall, with lowest temperature eight to ten degrees below freezing in the north to about freezing in the south.

Region 2 includes the Willamette Valley in Oregon and the region of similar climate north of it in Washington, including the shores of Puget Sound. The summers are warmer and drier than in Region 1 and the average lowest temperatures are from ten to twenty degrees Fahrenheit.

Region 3 includes the Sacramento and San Joaquin valleys in California. This region has hot, dry summers and winters with fifteen to twenty inches of rainfall. The temperature drops to ten or twelve degrees below freezing on the valley floor, with slightly higher temperatures on the hillsides.

Region 4 includes the Sierra Nevada and Cascade ranges of mountains. Conditions here vary considerably according to elevation. Many native plants grow well at the different altitudes, but at lower levels the valley plants are suitable. At a higher elevation those adapted to Region 28 will succeed if irrigation water is available; if not, those suitable for Region 19 will be best. For still higher elevations those listed for Regions 27 and 28, respectively, are the ones to use.

Region 5 comprises all that part of California from Santa Barbara to San Diego, Redlands and Riverside, including what is popularly known as Southern California. The summers are dry, cool on the coast, and warm inland; the winters are moderately rainy, being nearly free from frost on the coast and in the foothills. The same plants can be used here as in Regions 1 and 2, and in addition many plants recognized as less hardy.

Region 6 is the Columbia River valley. The summers are warm, while the winters have temperatures of ten to fifteen degrees Fahrenheit.

Region 7 includes the plateau of the eastern part of Washington and the valleys of the Idaho and western Montana. The summers are warm, and the winter temperatures range from zero to fifteen degrees below zero Fahrenheit.

Region 8 includes the Snake River plains and the Utah valley. It is a semi-arid country with water available for irrigation. The summers are hot and the winters cold. The same plants that succeed in Region 7 may be grown here.

Region 9 is the northern part of the great arid interior plateau included in Oregon, Nevada and Utah. Its characteristics are hot days and frosty nights in summer, with cold winters and less than ten inches of rainfall.

Region 10 embraces all the Southwestern Desert, including portions of California, Arizona and a corner of Nevada. The climate is hot to scorching, with rainfall from three to ten inches.

Region 11 embraces the southern part of the great arid interior plateau, including New Mexico and Arizona. Its characteristics are the same as the plateau farther north (Region 9), except that temperatures are higher.

Region 12 is that part of the Rocky Mountains included in Idaho, Montana, Wyoming, Washington and Oregon. The temperature and rainfall vary greatly, dependent on elevation and exposure. Many places are suitable for a great variety of plants; others are suited to only a few.

Region 13 includes the Rocky Mountains of Utah and Colorado. It is similar to the region farther north, except that the temperatures for the same elevation are about seven degrees warmer. The plants that can be used at an elevation of four thousand feet in Region 12 can be used at six thousand feet in this region.

Region 14 includes the Rocky Mountains of Arizona and New Mexico. It is similar to the region farther north, except that temperatures for the same elevation average about six degrees warmer than Region 13 and thirteen degrees warmer than Region 12. Allowing four degrees of temperature for each thousand feet of elevation would make possible the growing of a particular plant in Region 14 at elevations fifteen hundred feet higher than in Region 13 when the moisture conditions are similar.

Region 15 is the northern Great Plains area south to Kansas and Colorado, extending from about the five thousand-foot contour on the west to the black soils on the east. It is extremely cold in winter in the northeastern portions, usually dropping to thirty or forty degrees below zero Fahrenheit, while close to the mountains it is twenty degrees warmer. The summers are moderately warm. This region is generally recognized as the northern part of the dry-farming area.

Region 16 is the central portion of the Great Plains, including the plains portion of Kansas, Oklahoma and New Mexico; also portions of the plains in Colorado and Texas. It extends eastward from about the five thousand-foot contour on the west to the black soils on the east. The rainfall varies from ten to twenty inches. The climate is warmer and has greater evaporation than Region 15. It is the southern portion of the dry-farming area. The plants succeeding in Region 15 will grow here, together with many others that do not survive so much cold but have the same ability to withstand hot, dry winds.

Region 17 is the dry, hot portion of southwestern Texas, with little rainfall.

Region 18 is the subhumid black-soils country lying just east of the dry-farming area of the northern Great Plains and is intermediate as to moisture between Region 15 and the more humid area to the east of it. The winters are very cold and dry. The same types of plants succeed here as in Region 15 with a little wider range of varieties, as there is a little more moisture.

Region 19 is the subhumid black-soils area of Kansas, southern Nebraska, and most of Oklahoma. There is more moisture than in the dry-farming country to the west of it and less than in the area farther east. It is a locality of sudden variation in winter temperatures and of hot winds in summer.

Region 20 is the subhumid or transition region of central Texas with black- and chocolate-colored soils. In moisture conditions it is intermediate between the dry-farming regions farther west and the humid climate of eastern Texas.

Region 21 is in the northern part of the prairie country, having a short growing season with frequent droughts of more than thirty days and cold winters with drying winds. The rainfall is twenty to thirty inches, occurring mostly in the summer.

Region 22 is that portion of the prairie country having higher temperatures than Region 21, but subject to similar cold drying winds in winter. The rainfall is thirty to forty inches.

Region 23 is the western part of the Great Lakes forest area. The eastern portion is slightly warmer and more humid than the western portion, the latter much resembling Region 21.

Region 24 is largely that part of the country influenced by the Great Lakes, lying east of Lake Michigan, extending south into Ohio and eastward to Lake Ontario. There is considerable moisture in the atmosphere in addition to a rainfall of thirty to forty inches rather well distributed through the year. The winter temperatures are more moderate than in Region 23, and there is usually a good snow covering giving protection to herbaceous perennials.

Region 25 includes the Ohio and lower Tennessee River valleys and the Ozark Mountain region. The winter temperatures are rather moderate with much alternate freezing and thawing, while the summer is warm with a thirty-day drought often occurring near its close. The rainfall is forty to fifty inches.

Region 26 includes the colder sections of the eastern United States, comprising much of Maine, the mountainous portions of New York, and a portion of northern Michigan. It is characterized by cold winters with heavy snowfalls and short summers of long days and cool nights. The rainfall is abundant, and the heavy snows afford excellent protection to herbaceous plants.

Region 27 is the Appalachian Mountain country, including much of New England and New York, most of Pennsylvania, and the mountainous portions of the States southward. The rainfall is abundant, usually thirty-five to fifty inches, and is well distributed through the season. In the colder parts the snowfall is sufficient to give abundant protection to herbaceous plants.

Region 28 lies just east of Region 27 and includes the Piedmont and some adjoining sections with similar growing conditions. It extends from northern Alabama northeastward across the Carolinas and Virginia to New Jersey and the coast of Massachusetts. It is warmer than Region 27, with abundant rainfall except in late

summer, when thirty-day droughts often occur. The winters are open, with much freezing and thawing, and there is little snow protection to be relied upon.

Region 29 includes most of the cotton country, extending from what is known as east Texas eastward and northward to the Atlantic Ocean in North Carolina and Virginia. It lies between the Piedmont region and the swampy lower coastal plain that borders the Gulf of Mexico and the Atlantic Ocean. The rainfall is abundant, being from forty-five to sixty inches except toward the last of the rather warm summer, when a thirty-day drought frequently occurs.

Region 30 is the swampy coastal plain from Wilmington, North Carolina, southward along the Atlantic Ocean and westward along the Gulf of Mexico. It has moderate summer temperatures with hot sunshine, short winters and abundance of rainfall (fifty to sixty inches), and is almost subtropical.

Region 31 is southern Florida, with exception of the subtropical fringe. It is subject to annual frosts and has rather warm summers and a rainfall of over fifty inches. The vegetation approaches the subtropical, oranges, palms and the Grevillea or silk oak succeeding.

Region 32 is the tropical coast of southern Florida. It has slight range of temperature with no frosts and a rainfall of fifty to sixty inches. Palms and mangroves are the typical vegetation.

TABLE 1

SOME HERBACEOUS PERENNIALS SUITABLE FOR USE IN DIFFERENT SECTIONS OF THE UNITED STATES

Table 1 summarizes the principal features relating to the adaptation of different herbaceous perennials, arranged in alphabetical order, showing their suitability in regard to season of blooming, height of growth, and climatic requirements for use in various regions of the United States.

Column 1 gives the scientific name of the plant.

Columns 2 to 6 show by means of the symbol X the time of year when the flowers may be expected. The date will vary according to latitude and altitude and to a small extent according to longitude. Thus if the symbol appears in column 2, marked E, the blooms may be expected early in the flowering season; if in column 4, under M, about midsummer; and if in column 6, under L, just before frost. Columns 3 and 5 denote intermediate seasons.

Columns 7 to 12 show by means of the symbol X the approximate height of the plant under ordinary conditions. There will be much variation from this in many locations, depending upon adaptability of the plants to the particular location.

Columns R1 to R32, under "Regions," indicate the different locations, as shown on the map (Plate 254, page 674). In these regional columns the symbol I indicates that the plant requires irrigation during the dry season; N indicates that the plant is native to the region; P indicates that special winter protection is required; X indicates that in the region thus designated the plant may be expected to thrive under average care with respect to water, shade and other cultural conditions, including special treatment that would be required for the particular plant anywhere.

Scientific name of plant	Season					Height (feet)						Regions. [Reference is made to the map (Plate 254)]																																			
	E	—	M	—	L	0	1	2	3	4	5	R. 1	R. 2	R. 3	R. 4	R. 5	R. 6	R. 7	R. 8	R. 9	R. 10	R. 11	R. 12	R. 13	R. 14	R. 15	R. 16	R. 17	R. 18	R. 19	R. 20	R. 21	R. 22	R. 23	R. 24	R. 25	R. 26	R. 27	R. 28	R. 29	R. 30	R. 31	R. 32
1	2	3	4	5	6	7	8	9	10	11	12																																			
Adiantum —																																													
Capillus-veneris	..	..	..	..	..	..	..	..	..	..	..	I	I	I	I	I	..	..	..	..	..	..	..	..	..	..	..	..	..	X	..	..	..	..	X	..	..	N	N	N	..	..
Pedatum	..	..	..	..	..	..	x	..	..	..	..	I	I	..	I	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	N	X	N	N	N	N	X	X	..	..	..
Althæa —																																												
Ficifolia	..	x	x	..	..	..	..	..	x	x	x	I	I	I	I	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	X	X	X	X	X	X	X	X	X	X
Rosea	..	x	..	..	..	..	..	..	..	x	x	I	I	I	I	I	I	I	I	I	I	I	X	X	X	X	X	..	X	X	..	N	N	N	N	N	N	N	X	X	..	..
Anemone —																																												
Canadensis	..	x	x	x	..	..	x	..	..	..	..	..	..	..	..	..	I	I	..	..	..	..	..	..	..	..	..	..	..	X	..	..	N	X	N	N	X	X	N	X	X	..	..
Coronaria	x	x	..	..	..	x	..	..	..	..	..	I	I	I	I	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	X	X	..	X	X	..	..	..	..	..
Japonica	..	..	..	x	x	..	..	x	x	..	..	I	I	I	I	I	..	..	..	I	I	..	..	..	..	I	..	..	I	I	..	X	X	X	X	X	X	X	X	X	..	..
Aquilegia —																																												
Canadensis	x	x	..	..	..	..	x	..	..	..	..	X	X	X	X	X	X	I	I	I	..	I	X	X	X	N	N	N	N	X	N	N	N	N	N	N	N	X	X	..	..
Chrysantha	..	x	x	..	..	..	..	..	x	..	..	X	X	X	X	X	X	X	X	X	X	N	X	X	N	..	X	..	..	X	X	X	X	X	X	X	X	X	X	..	..
Caerulea	..	x	x	..	..	..	x	..	..	..	..	X	X	X	X	..	X	X	X	X	X	N	N	N	N	..	X	..	..	X	X	X	X	X	X	X	X	X	..	..	..
Vulgaris	..	x	x	..	..	..	x	..	..	..	..	X	X	..	X	..	X	X	X	X	..	..	X	X	X	..	X	..	..	X	X	X	X	X	X	X	X	..	..	..	..
Arundo donax	..	..	..	..	..	..	..	..	..	..	x	X	X	X	X	I	..	..	..	..	I	I	..	..	..	..	..	X	..	..	X	..	..	..	X	..	X	X	X	..	..	..
Asplenium spp	..	..	..	..	..	..	x	x	..	..	..	I	I	..	..	..	..	..	..	..	..	..	I	I	I	..	..	..	..	..	..	..	..	..	X	X	X	X	X	X	X	..
Bambusa	..	..	..	..	..	..	..	..	..	..	..	X	..	X	..	X	..	..	..	..	I	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	X	X	X	X	X
Campanula —																																												
Carpatica	..	..	x	x	..	..	x	x	..	..	..	I	I	I	I	..	I	I	..	I	..	..	X	X	..	X	..	..	..	..	X	X	X	X	X	X	..	..	..	..	..
Glomerata	..	..	x	x	..	..	x	..	..	..	..	I	..	I	I	..	I	I	..	I	..	..	X	X	..	..	..	..	..	..	X	X	X	X	X	N	N	..	..	..	..
Latiloba	..	..	x	..	..	..	..	x	..	..	..	I	I	..	I	..	I	I	..	I	..	..	X	X	..	..	..	..	..	..	P	..	..	P	X	X	..	..	..	..	..
Medium	..	x	x	..	..	..	..	x	x	..	..	I	I	I	I	I	I	I	..	I	I	I	X	X	..	X	..	..	..	..	X	..	..	X	X	X	X	X	X	..	..
Medium calycanthema	..	..	x	x	..	..	..	x	..	..	..	I	I	..	I	..	I	I	..	I	..	..	X	X	..	..	..	..	..	..	X	..	X	X	X	X	..	..	..	..	..	..
Persicifolia	..	x	x	..	..	..	..	x	..	..	..	I	I	..	I	..	I	I	..	I	..	..	X	X	..	..	..	..	..	..	X	..	..	X	X	X	X	X	..	..	..	..
Pyramidalis	..	x	x	x	..	..	..	x	x	..	..	I	I	I	I	..	I	I	..	I	..	..	X	X	..	..	..	..	..	..	X	X	X	X	X	..	X	X	..	..	..	..
Rotundifolia	..	x	x	x	..	x	x	..	..	..	..	I	I	I	N	..	I	I	..	I	..	..	N	N	N	..	..	..	N	..	N	N	N	N	X	N	N	X	X	..	..	..
Camptosorus rhizophyllus	..	..	..	..	..	x	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	N	N	N	N	N	N	N	N	N	..	..	..
Chrysanthemum —																																												
Coccineum	..	x	x	..	..	..	x	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	X	..	..	X	X	X	..	..	..	..	..
Hortorum	..	..	..	..	x	..	..	..	x	x	..	X	X	X	..	..	X	..	..	..	I	..	..	..	..	..	I	..	..	X	..	..	..	..	X	..	..	X	X	X	X	X
Indicum	..	..	..	..	x	..	x	x	..	..	..	X	X	X	..	X	..	..	X	X	X	..	..	..	..	..	I	..	..	X	..	..	..	..	X	..	..	..	..	..	..	..
Maximum	..	x	x	x	..	..	x	x	..	..	..	X	X	X	X	X	X	X	X	X	X	..	..	..	..	..	I	..	..	X	X	X	X	X	X	X	X	X	X	..	..
Morifolium	..	..	..	..	x	..	..	..	x	x	..	X	X	X	..	..	X	..	..	..	..	..	..	..	..	..	I	..	..	X	..	..	..	..	X	X	X	X	X	X	..	..
Uliginosum	..	..	..	..	..	..	..	..	x	x	..	..	..	..	X	..	X	X	X	X	..	..	..	..	..	..	I	..	..	X	X	..	..	X	X	X	X	X	X	..	..
Convallaria majalis	x	..	..	..	..	x	..	..	..	..	..	X	X	..	X	..	I	I	I	I	..	..	X	X	X	I	I	..	I	I	..	X	X	X	X	X	N	X	..	..	..	..
Delphinium —																																												
Cardinale	..	..	x	..	..	..	..	x	x	..	..	X	..	X	..	N	..	..	..	..	I	X	..	..	..	..	X	..	..	X	..	..	..	..	..	..	..	X	X	..	..	..
Cultorum	..	x	x	x	..	..	..	..	x	x	x	I	I	I	I	..	I	I	I	I	..	..	X	X	X	X	..	..	X	..	..	..	..	X	X	..	X	X	..	..	..	..
Elatum	..	x	x	x	..	..	..	..	x	..	..	I	I	I	I	..	I	I	I	I	..	..	X	X	X	X	..	..	X	..	X	..	X	X	..	X	X	X	..	..	..	..
Exaltatum	..	..	x	..	..	..	..	..	x	..	..	I	I	I	I	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	X	..	..	X	..	..	..	..	..	..
Fissum	..	x	x	x	..	..	..	..	..	x	..	I	I	I	I	..	I	I	I	I	..	..	X	X	X	X	..	..	X	..	..	..	X	X	X	X	X	X	..	..	..	..
Formosum	..	x	x	..	..	..	..	x	..	..	..	I	I	I	I	..	I	I	I	I	..	..	X	X	X	X	..	..	X	..	..	..	X	X	X	X	X	X	..	..	..	..
Grandiflorum	..	x	x	x	..	..	x	x	..	..	..	I	I	I	I	I	I	I	I	I	I	..	X	X	X	X	..	..	X	..	..	..	X	X	X	X	X	X	..	..	..	..
Dennstaedtia punctiloba	..	..	..	..	..	..	x	..	..	..	..	I	I	..	I	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	X	N	N	N	N	N	N	N	..	..	..	..
Dianthus —																																												
Barbatus	..	x	..	..	..	..	x	..	..	..	..	I	I	I	..	..	I	..	..	..	I	I	..	..	..	I	..	..	..	X	X	X	X	X	X	X	X	X	..	..	..	..
Caryophyllus	..	x	x	x	..	..	x	..	..	..	..	I	I	I	I	I	I	..	..	I	I	X	X	X	X	..	X	..	..	X	X	X	X	X	X	X	X	X	..	..	..	..
Deltoides	..	x	..	..	..	x	..	..	..	..	..	I	I	I	..	..	I	..	..	..	..	I	..	..	..	..	X	..	..	X	..	..	..	X	X	X	X	X	..	..	..	..	..
Plumarius	..	x	..	..	..	x	..	..	..	..	..	I	I	I	I	..	I	I	I	I	..	I	X	X	X	P	..	I	X	X	I	X	X	X	X	X	X	X	..	..	..	..
Plumarius semperflorens	..	x	x	x	..	x	..	..	..	..	..	I	I	..	I	..	I	..	..	..	..	I	..	..	..	..	P	..	..	..	..	X	X	X	X	X	X	X	X	..	..	..	..
Dicentra sp.	..	x	..	..	..	..	..	..	..	..	..	I	I	I	I	I	I	N	I	I	..	..	P	P	P	..	..	..	P	X	X	X	N	N	X	N	N	X	..	..	..

Scientific name of plant	Season					Height (feet)						Regions. [Reference is made to the map (Plate 254)]																																
	E	—	M	—	L	0	1	2	3	4	5	R. 1	R. 2	R. 3	R. 4	R. 5	R. 6	R. 7	R. 8	R. 9	R. 10	R. 11	R. 12	R. 13	R. 14	R. 15	R. 16	R. 17	R. 18	R. 19	R. 20	R. 21	R. 22	R. 23	R. 24	R. 25	R. 26	R. 27	R. 28	R. 29	R. 30	R. 31	R. 32
1	2	3	4	5	6	7	8	9	10	11	12																																
Dryopteris —																																											
Cristata							x					I	I		I		I	I	N				X	X	X			X	X	X	N	N	N	N	N	N	N	X	X			
Filixmas							x	x				I	I		N		I	I	I				N	N	N	X	X	N	X		N	X	N	N	X	N	N	X	X			
Novaboracense							x					I	I		I		I	I	I				X	X	X			X	X	X	N	N	N	N	N	N	N	X	X			
Spinulosa							x								I		I	I	I				N	X	X	N		N			N	N	N	N	N	N	N	X	X			
Spinulosa intermedia							x								I		I	I	I				N	X	X	N		N			N	N	N	N	N	N	N	X	X			
Echinocactus —																																											
Polycephalus							x					X	X	N		N				N	N	X						X											X	X			
Viridescens						x						X		X		N					N	X						X											X	X			
Echinocereus rigidissimus												X		X		N					N	X						X											X	X			
Viridiflorus													X	X	X	X	X	X	N	X	N		X	X		N	N			N	X											
Erythronium sp.												N	N		N								N	N	N							N	N	N	N	N	N	N	N	N			
Eulalia —																																											
Gracillima											x	X	X	X	X	X	X	X	X		I	I					I	I		X	X		X	X	X	X	X	X	X	X	X	X	X
Univittata											x	X	X	X	X	X	X	X	X	X	I	I					I	I		X	X		X	X	X	X	X	X	X	X	X	X
Gracillima univittata											x	X	X	X	X	X	X	X	X		I	I					I	I		X	X		X	X	X	X	X	X	X	X	X	X
Japonica										x		X	X	X	X	X	X	X	X		I	I					I	I		X	X		X	X	X	X	X	X	X	X	X	X
Funkia. See Niobe																																											
Gentiana sp.			x			x	x								N							N	N	N						N		N	N	N	N	N	N					
Gynerium argenteum (Cortaderia argentea)											x	X		X		X				I	I						I			X				X	X	X	X	X	X			
Gormania oreganum						x						N	N		N		N	N	X	X			X	X	X								X	X		X	X						
Helenium —																																											
Autumnale			x	x				x	x			X	X	X	X	X	X	X	X	X	I	X	X	X	N	X	X	N	N	X	N	N	N	N	N	N	N	N	X			
Hoopesii		x	x	x			x	x							X		X	X	X			N	N	N	P					X		X	X	X							
Helianthus —																																											
Decapetalus			x	x					x	x		X	X	X		X					X	X				X	X			X	X	X	X	N	N	N	N	X	X			
Rigidus				x	x		x	x				X	X	X		X										N				N	N	N	N	N	X	X	N	X				
Hemerocallis —																																											
Aurantiaca			x					x				X	X	X	X	X	X	X	X	X		X	X	X		X	X		X	X	X	X	X	X	X	X	X	X	X	X	X
Dumortierii		x					x	x				X	X	X	I	X	X	X	X	I					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Lilio-asphodelus		x	x				x					X	X	X	I	X	X	X	X	I	..				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Fulva		x	x	x			x	x				X		X	I	X	X	X	X	I					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Thunbergii			x	x					x			X	X	X		X				X	I					I	I		X	X		X	X	X	X	X	X	X	X	X	X
Hibiscus —																																											
Coccineus			x	x					x	x				I		I	X										X			X							N	N	X	X		
Lasiocarpus				x						x	x						X					X					X	X		X							X	N				
Militaris				x					x			X	X	X		X	X				X	X					X	X	X	X	X	N	N	N	N	N	X	N	N	X	X	
Moscheutos				x						x	x	X	X	X		X					X	X					X	X		X	X	X	X	X	N	N	X	N	N	X	X	X
Iris —																																											
Albicans	x							x				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Aphylla	x							x				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
Biflora	x					x						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
Cristata	x					x						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	N	X	N	X	X			
Flavescens	x							x				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
Florentina	x						x					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
Germanica	x							x				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Kaempferi		x							x			X	X	X	X		X	X	X	I	..	I	..	..	..	I	X	..	X	X	..	X	X	X	X	X	X	X	..			
Laevigata		x							x			X	X	X	X		X	X	X	I	..	I	..	..	..	I	X	..	X	X	..	X	X	X	X	X	X	X	..			
Missouriensis	x					x						X	X		X		X	X	X	N	..	N	N	N	N	N	X	..	N	X	X	X	X	X	X	X	X	X	X	X		
Neglecta	x							x				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Pallida	x							x				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Pallida dalmatica	x								x			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Plicata	x							x				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Pseudacorus		x						x				X	X	X	X	X	X	X	X	X	X	X	X	X	X	I	X	X	X	X	X	X	X	X	X	X	X	X	X			

Scientific name of plant	Season					Height (feet)						Regions. [Reference is made to the map (Plate 254)]																																		
	E	—	M	—	L	0	1	2	3	4	5	R. 1	R. 2	R. 3	R. 4	R. 5	R. 6	R. 7	R. 8	R. 9	R. 10	R. 11	R. 12	R. 13	R. 14	R. 15	R. 16	R. 17	R. 18	R. 19	R. 20	R. 21	R. 22	R. 23	R. 24	R. 25	R. 26	R. 27	R. 28	R. 29	R. 30	R. 31	R. 32
1	2	3	4	5	6	7	8	9	10	11	12																																		
Iris (continued)																																												
Pumila	x	..	..	..	..	x	..	..	..	..	..	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	..	..
Sambucina	x	..	..	..	..	..	..	x	..	..	..	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	..	..
Siberica	..	x	..	..	..	..	..	x	x	..	..	X	X	..	X	..	X	X	X	X	..	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	..	..	..	..
Squalens	x	..	..	..	..	..	..	x	..	..	..	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	..	..	..	..
Variegata	x	..	..	..	..	..	..	x	..	..	..	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	..	..	..	..
Versicolor	x	x	..	..	..	..	x	x	..	..	..	X	X	X	X	X	X	X	X	X	X	X	X	X	N	X	X	N	X	X	N	N	N	N	X	N	N	N	N	..	..	..
Xiphioides	x	..	..	..	..	..	x	..	..	..	..	X	X	X	X	X	X	X	X	X	X	..	..	..	..	..	..	..	..	..	..	..	..	..	X	..	..	..	..	..	..	..
Xiphium	x	..	..	..	..	..	..	x	..	..	..	X	X	X	X	X	X	X	X	X	X	..	..	..	..	..	..	..	..	..	..	..	X	..	..	X	..	..	..	..	..	..
Lilium sp.	..	x	x	x	x	..	x	x	x	x	..	I	I	I	I	I	I	I	I	I	I	X	X	X	..	X	..	..	X	X	X	X	X	X	X	X	X	X	X	X	X
Mammillaria —																																										
Grahamii	..	..	..	..	..	x	..	..	..	..	..	X	X	X	X	N	X	X	X	X	N	N	X	X	X	X	N	X	X	X	..	..	..	..	..	..	..	..	..	..	..
Missouriensis	..	..	..	..	..	x	..	..	..	..	..	..	X	..	X	X	X	X	X	X	X	X	X	X	X	N	N	X	N	N	X	..	..	..	..	..	..	..	..	X	X	..	..
Niobe —																																										
Cærulea	..	..	x	..	..	..	x	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	X	X	X	X	X	X	X	X	X	X	..	..
Fortunei	..	..	x	..	..	..	x	..	..	..	..	X	X	I	..	..	X	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	X	..	X	X	X	X	X	X	..	..
Lancifolia	..	..	x	x	..	..	x	..	..	..	..	X	X	I	..	..	X	..	..	..	..	..	..	..	..	..	..	..	..	..	..	X	..	X	X	X	X	X	X	..	..
Sieboldiana	..	x	..	..	..	..	x	..	..	..	..	X	X	X	..	..	X	..	..	..	..	..	..	..	..	..	..	..	..	..	..	X	..	..	X	X	X	X	X	X	..	..
Subcordata	..	..	..	x	..	..	x	..	..	..	..	X	X	I	..	..	X	..	..	..	..	..	..	..	..	..	..	..	..	..	..	X	..	..	X	X	X	X	X	X	..	..
Opuntia—																																										
Arenaria	x	..	..	..	..	x	..	..	..	..	..	..	..	X	..	X	..	..	..	..	X	X	..	..	..	..	N	..	..	N	..	..	..	..	..	..	..	N	N	..	..	..
Humifusa	..	..	..	..	..	x	..	..	..	..	..	..	..	X	X	X	X	X	X	X	X	X	X	X	X	..	X	..	N	N	N	N	N	N	N	..	..	..	..	..	..	..
Phœcantha	..	..	..	..	..	..	x	..	..	..	..	..	..	X	X	N	X	X	X	X	N	N	X	X	X	..	X	N	..	X	X	..	X	..	X	..	..	..	..	..	..	..
Polyacantha	..	..	..	..	..	x	..	..	..	..	..	X	X	X	X	X	X	X	X	X	X	X	X	X	X	N	N	X	N	N	X	N	N	N	X	X	X	X	X	X	..	..
Osmunda —																																										
Cinnamomea	..	..	..	..	..	..	..	x	x	x	..	I	I	..	I	..	I	I	I	..	..	N	X	N	X	..	..	..	X	X	X	X	N	N	N	N	N	N	N	X	..	..
Claytoniana	..	..	..	..	..	..	..	x	x	x	..	I	I	..	I	..	I	I	I	..	..	..	X	X	X	..	..	..	X	X	X	N	N	N	N	N	N	N	X	..	..	..
Regalis	..	..	..	..	..	..	..	..	x	x	x	I	I	..	I	..	I	I	I	..	..	..	X	X	X	..	..	..	X	N	X	N	N	N	N	N	N	N	X	N	..	..
Pæonia officinalis	x	..	..	..	..	..	..	x	..	..	..	X	X	X	X	..	X	X	X	X	..	X	X	X	X	X	..	..	X	X	X	X	X	X	X	X	X	X	X	X	..	..
Pediocactus simpsonii	..	..	..	..	..	x	..	..	..	..	..	X	X	X	X	X	X	X	X	N	X	X	N	N	X	..	X	X	..	X	X	..	..	..	..	..	..	..	..	..	..	..
Pennisetum —																																										
Japonicum	..	..	..	..	..	..	..	x	..	x	..	..	..	..	..	I	..	..	..	..	X	..	..	..	..	..	..	..	..	..	..	..	..	..	..	X	..	..	X	X	X	X	X
Longistylum	..	..	..	..	..	..	x	..	..	..	..	..	..	I	..	I	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	X	X	X	..	..
Ruppeli	..	..	..	..	..	..	..	x	..	..	..	..	..	I	..	I	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	X	X	..	..
Phegopteris polypodioides	..	..	..	..	..	x	..	..	..	..	..	..	..	..	N	..	N	N	..	..	..	N	..	..	N	..	..	N	..	..	N	..	N	N	..	N	..	..	..	..	..	..
Phlox —																																										
Divaricata	x	x	..	..	..	x	..	..	..	..	..	I	I	..	I	..	I	I	I	..	..	..	X	X	X	X	X	..	X	X	X	X	N	N	N	N	N	N	N	N	..	..
Maculata	..	x	x	..	..	x	x	x	..	..	..	I	I	..	I	..	I	I	I	..	..	..	X	X	X	X	X	..	X	X	X	X	N	N	N	X	N	N	N	N	..	..
Paniculata	..	..	..	..	..	..	..	x	x	..	..	I	I	I	I	..	I	I	I	..	..	..	X	X	X	X	X	..	X	X	X	X	N	N	N	X	N	N	N	N	..	..
Subulata	..	..	..	..	x	..	..	..	..	x	..	I	I	I	I	..	I	I	I	..	..	..	X	X	X	X	X	..	X	X	X	X	X	X	X	X	N	N	N	N	..	..
Platycodon grandiflorum	..	..	x	..	..	..	x	x	..	..	..	I	I	..	I	..	I	I	I	..	..	..	X	X	X	..	X	X	X	X	X	X	X	X	X	X	X	X	X	X	..	..
Polystichum acrostichoides	..	..	..	..	..	..	x	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	N	..	N	N	N	N	N	N	N	N	..	..
Rudbeckia —																																										
Hirta	..	..	..	x	..	..	x	x	..	..	..	X	X	X	X	X	X	X	X	X	X	X	X	X	N	N	X	N	N	N	N	N	N	N	N	N	N	N	N	..	..
Laciniata	..	..	x	x	..	..	..	..	x	x	x	X	X	X	X	X	X	X	X	X	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	..	..
Nitida	..	..	..	x	..	..	..	x	x	..	..	X	X	X	X	X	X	..	..	..	X	X	..	..	..	..	X	..	..	X	N	..	X	..	..	X	..	..	X	N	N	..	..
Sedum —																																										
Acre	..	x	..	..	..	x	..	..	..	..	..	X	X	X	X	X	X	..	..	..	X	X	..	X	X	..	X	X	..	X	X	X	X	X	X	X	X	X	X	X	X	X
Aizoon	..	..	..	x	..	x	..	..	..	..	..	X	X	X	X	X	X	..	..	..	X	X	..	X	X	..	X	X	..	X	X	X	X	X	X	X	X	X	X	X	X	X
Album	..	..	x	x	..	x	..	..	..	..	..	X	X	X	X	X	X	..	..	..	X	X	X	X	X	..	X	X	..	X	X	X	X	X	X	X	X	X	X	X	X	X
Fabaria	..	..	..	..	..	x	x	..	..	..	..	X	X	X	X	X	X	..	..	..	X	X	..	..	..	..	X	X	..	X	X	..	X	X	X	X	X	X	X	X	X	..	..
Hybridum	..	..	x	..	..	x	..	..	..	..	..	X	X	X	X	X	X	X	X	X	X	X	X	X	X	..	X	X	..	X	X	X	X	X	X	X	X	X	X	X	..	..
Kamtschaticum	..	..	x	x	..	x	..	..	..	..	..	X	X	X	X	X	X	X	X	X	X	X	X	X	X	..	X	X	..	X	X	X	X	X	X	X	X	X	X	X	..	..
Maximowiczii	..	..	..	x	..	x	..	..	..	..	..	X	X	X	X	X	X	..	..	..	X	X	..	X	X	..	X	X	..	X	X	X	X	X	X	X	X	X	X	X	X	X

Scientific name of plant	Season					Height (feet)						Regions. [Reference is made to the map (Plate 254)]																							
	E	—	M	—	L	0	1	2	3	4	5	R. 1	R. 2	R. 3	R. 4	R. 5	R. 6	R. 7	R. 8	R. 9	R. 10	R. 11	R. 12	R. 13	R. 14	R. 15	R. 16	R. 17	R. 18	R. 19	R. 20	R. 21	R. 22	R. 23	R. 24	R. 25	R. 26	R. 27	R. 28	R. 29	R. 30	R. 31	R. 32
1	2	3	4	5	6	7	8	9	10	11	12																														
Sedum (continued)																																									
Maximum						x	x					x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Reflexum					x							x	x	x	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Roseum				x		x						x	x	x	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Rupestre				x		x						x	x	x	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Sexangulare		x				x						x	x	x	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Sieboldii					x	x	x					x	x	x	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Spectabile				x								x	x	x	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Stoloniferum						x	x					x	x	x	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Telephium			x	x								x	x	x	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Trillium grandiflorum		x				x																																			
Woodsia obtusa																																									
Yucca —																																									
Baccata												x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Filamentosa												x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Flaccida												x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Glauca												x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Harrimanæ												x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

List of Ornamental Shrubs and Trees Suitable for Planting in Different Regions of the United States

For permanent effects in ornamental planting woody plants, both deciduous and evergreen should be used. Their effect is continuous from year to year, and winter as well as summer decoration can be provided. Plants native to any section should be given first consideration. These may be observed in the woods and fields in summer and transplanted at the next appropriate transplanting season. Next in value are those suggested in the following lists. Many of these plants are also native. Ornamental plants for use in the different regions shown on the regional map (Plate 254, page 674) are arranged in the following list according to their approximate ultimate height. This height will vary much, according to the region where grown, to the character, tilth, fertility, moisture content and acidity of the soil, the exposure and the care the plants receive.

Those plants not specially designated in the lists are deciduous. The others are followed by special marks, such as B, broad-leaf evergreens; C, cone-bearing evergreens; H, half evergreens; that is, hold their leaves until midwinter or after; P, palms or palmlike.

PLANTS FOR REGION 1

Shrubs to 2 Feet or Under. *Andromeda polifolia* (B), *Berberis repens* (B), *Calluna vulgaris* (B), *Ceanothus americanus, Chamædaphne calyculata* (B), *Cotoneaster buxifolia, Cotoneaster microphylla* (B), *Daphne cneorum* (B), *Erica carnea* (B), *Erica vagans* (B), *Hypericum moserianum* (B), *Juniperus communis depressa* (C), *Juniperus prostrata* (C), *Rhus aromatica.*

Shrubs to 4 Feet. *Azalea amœna* (B), *Callicarpa purpurea, cotoneaster simonsi, Daphne mezereum, Deutzia gracilis, Evonymus radicans, Kalmia angustifolia* (B), *Pieris floribunda* (B), *Robinia hispida, Rosa bracteata, Spiræa bumalda, Spiræa bumalda* Anthony Waterer, *Spiræa japonica, Spiræa tomentosa, Symphoricarpos occidentalis, Symphoricarpos racemosus, Symphoricarpos vulgaris, Viburnum acerifolium.*

Shrubs to 6 Feet. *Azalea indica* (B), *Azalea nudiflora, Berberis aquifolium* (B), *Berberis thunbergi, Buxus sempervirens suffruticosa* (B), *Callicarpa americana, Calycanthus floridus, Caryopteris mastacanthus, Cephalanthus occidentalis, Clethra alnifolia, Cornus alba, Cornus sanguinea, Cornus stolonifera flaviramea, Cydonia japonica, Deutzia crenata, Diervilla rosea, Hydrangea arborescens, Hydrangea arborescens sterilis, Hydrangea quercifolia, Jasminum nudiflorum, Juniperus sabina* (C), *Juniperus, squamata* (C), *Kerria japonica, Ligustrum ibota regelianum, Lonicera morrowi, Nandina japonica* (B), *Rhodotypos kerrioides, Ribes odoratum, Ribes americanum, Rosa rugosa, Spiræa prunifolia, Spiræa thunbergi, Spiræa vanhouttei, Staphylea bumalda, Stephanandra flexuosa, Tamarix odessana.*

Shrubs to 8 Feet. *Abelia grandiflora* (H), *Aucuba japonica* (B), *Berberis ilicifolia* (H), *Buddleia davidi, Cephalotaxus pedunculata* (C), *Elæagnus longipes, Elæagnus macrophylla* (B), *Elæagnus pungens* (B), *Evonymus alatus, Evonymus japonicus* (B), *Forsythia suspensa, Forsythia viridissima, Hydrangea hortensis, Ilex verticillata, Kalmia latifolia* (B), *Ligustrum sinense, Lonicera fragrantissima, Myrica carolinensis* (H), *Philadelphus lewisi, Prunus pumila, Viburnum americanum, Viburnum nudum, Viburnum tomentosum.*

Shrubs to 10 Feet. *Æsculus parviflora, Alnus mitchelliana, Amelanchier alnifolia, Acanthopanax pentaphyllum, Azalea calendulacea, Ceanothus thyrsiflorus, Cephalotaxus drupacea sinensis* (C), *Cercis japonica, Cytisus scoparius, Exochorda grandiflora, Hibiscus syriacus, Hydrangea paniculata, Ligustrum ibota, Ligustrum japonicum* (B), *Lonicera ruprechtiana, Lonicera tatarica, Lycium chinense, Philadelphus coronarius, Philadelphus inodorus, Physocarpus opulifolius, Rhododendron catawbiense* (B), *Spartium junceum, Staphylea trifolia, Syringa chinensis, Syringa persica, Tamarix gallica, Thuja occidentalis (dwarf varieties)* (C), *Thuja orientalis (dwarf varieties)* (C), *Viburnum opulus.*

Shrubs to 15 Feet. *Amorpha fruticosa, Chamæcyparis obtusa* (C), *Chamæcyparis pisifera* (C), *Chamæcyparis pisifera filifera* (C), *Chamæcyparis pisifera plumosa* (C), *Chamæcyparis pisifera squarrosa* (C), *Chionanthus virginica, Colutea arborescens, Cornus florida, Cornus mas, Cornus paniculata, Cratægus oxyacantha, Hamamelis virginiana, Hydrangea paniculata grandiflora, Ilex vomitoria* (B), *Juniperus scopulorum* (C), *Ligustrum amurense, Magnolia stellata, Osmanthus aquifolium* (B), *Osmanthus fragrans* (B), *Photinia serrulata* (B), *Prunus pissardi, Punica granatum* (B), *Pyracantha coccinea lalandi* (H), *Rhododendron maximum* (B), *Rhus cotinus, Rhus glabra, Salix caprea, Sambucus canadensis, Sambucus pubens, Syringa vulgaris. Viburnum prunifolium.*

Shrubs or Small Trees to 20 Feet. *Amelanchier oblongifolia, Camellia japonica* (B), *Caragana arborescens, Coprosma baueri* (tall form) (B), *Elæagnus angustifolia, Evonymus atropurpureus, Ilex crenata* (B), *Ligustrum lucidum* (B), *Melaleuca decussata, Pieris japonica* (B), *Ptelea trifoliata* (B).

Shrubs or Small Trees to 25 Feet. *Amelanchier*

canadensis, Buxus sempervirens (B), *Cercis canadensis, Cratægus crusgalli, Ilex aquifolium* (B), *Juniperus chinensis* (C), *Juniperus communis* (C), *Juniperus excelsa* (C), *Juniperus virginiana* (C), *Lagerstrœmia indica, Ligustrum ovalifolium* (H), *Prunus caroliniana* (B), *Styrax japonica, Syringa japonica.*

LARGE TREES. London plane, English elm, Oregon maple, madrone (B), European linden, California black walnut, American elm, Huntingdon elm, California sycamore, honey locust, black locust.

PLANTS FOR REGION 2

SHRUBS TO 2 FEET OR UNDER. *Berberis repens* (B), *Calluna vulgaris* (B), *Ceanothus americanus, Cotoneaster buxifolia, Cotoneaster microphylla* (B), *Daphne cneorum* (B), *Erica carnea* (B), *Hypericum moserianum, Juniperus communis depressa* (C), *Juniperus prostrata* (C), *Rhus aromatica.*

SHRUBS TO 4 FEET. *Callicarpa purpurea, Cotoneaster simonsi, Daphne mezereum, Deutzia gracilis, Evonymus radicans, Pieris floribunda* (B), *Rosa bracteata, Spiræa bumalda, Spiræa bumalda* Anthony Waterer, *Spiræa japonica, Spiræa tomentosa, Symphoricarpos occidentalis, Symphoricarpos racemosus, Symphoricarpos vulgaris, Viburnum acerifolium.*

SHRUBS TO 6 FEET. *Azalea nudiflora, Berberis aquifolium* (B), *Berberis thunbergi, Buddleia davidi, Callicarpa americana, Calycanthus floridus, Caryopteris mastacanthus, Cephalanthus occidentalis, Clethra alnifolia, Cornus alba, Cornus sanguinea, Cornus stolonifera flaviramea, Cydonia japonica, Deutzia crenata, Diervilla rosea, Hydrangea arborescens, Hydrangea arborescens sterilis, Jasminum nudiflorum, Juniperus sabina* (C), *Kerria japonica, Ligustrum regelianum, Lonicera morrowi, Nandina japonica* (B), *Rhodotypos kerrioides, Ribes odoratum, Rosa rugosa, Spiræa prunifolia, Spiræa thunbergi, Spiræa vanhouttei, Staphylea bumalda, Stephanandra flexuosa, Tamarix odessana, Viburnum suspensum* (B).

SHRUBS TO 8 FEET. *Abelia grandiflora* (H), *Aucuba japonica* (B), *Berberis ilicifolia* (B), *Cephalotaxus pedunculata* (C), *Elæagnus longipes, Evonymus alatus, Evonymus japonicus* (B), *Forsythia suspensa, Forsythia viridissima, Ilex verticillata, Kalmia latifolia* (B), *Ligustrum sinense, Lonicera fragrantissima, Philadelphus lewisi, Prunus pumila, Viburnum americanum, Viburnum dentatum, Viburnum nudum, Viburnum tinus* (B), *Viburnum tomentosum.*

SHRUBS TO 10 FEET. *Æsculus parviflora, Alnus mitchelliana, Amelanchier alnifolia, Acanthopanax pentaphyllum, Ceanothus thyrsiflorus, Cephalotaxus drupacea sinensis* (C), *Cercis japonica, Cytisus scoparius, Exochorda grandiflora, Hibiscus syriacus, Hydrangea paniculata, Ligustrum ibota, Ligustrum japonicum* (B), *Lonicera ruprechtiana, Lonicera tatarica, Lycium chinense, Philadelphus coronarius, Philadelphus inodorus, Physocarpus opulifolius, Spartium junceum, Syringa chinensis, Syringa persica, Tamarix gallica, Thuja occidentalis* (dwarf varieties) (C), *Thuja orientalis* (dwarf varieties) (C), *Viburnum opulus.*

SHRUBS TO 15 FEET. *Colutea arborescens, Cornus florida, Cornus mas, Cornus paniculata, Cratægus oxyacantha, Hamamelis virginiana, Hydrangea paniculata grandiflora, Ilex vomitoria* (B), *Juniperus scopulorum* (C), *Ligustrum amurense, Osmanthus aquifolium* (B), *Osmanthus fragrans* (B), *Photinia serrulata* (B), *Prunus pissardi, Punica granatum* (B), *Pyracantha coccinea lalandi* (H), *Rhododendron maximum* (B), *Rhus cotinus, Salix caprea, Sambucus canadensis, Sambucus pubens, Staphylea trifolia, Syringa vulgaris, Viburnum prunifolium.*

SHRUBS OR SMALL TREES TO 20 FEET. *Amelanchier oblongifolia, Caragana arborescens, Coprosma baueri* (tall form), *Elæagnus angustifolia, Evonymus atropurpureus, Ilex crenata* (B), *Melaleuca decussata, Ptelea trifoliata.*

SHRUBS OR SMALL TREES TO 25 FEET. *Amelanchier canadensis, Cercis canadensis, Cratægus crusgalli, Ilex aquifolium* (B), *Juniperus chinensis* (C), *Juniperus communis* (C), *Juniperus excelsa* (C), *Juniperus virginiana* (C), *Lagerstrœmia indica, Ligustrum ovalifolium, Styrax japonica, Syringa japonica.*

LARGE TREES. Oregon, maple, madrone (B), honey locust, white oak, sugar maple, California black walnut, black locust.

PLANTS FOR REGION 3

SHRUBS TO 2 FEET OR UNDER. *Berberis repens* (B), *Cotoneaster buxifolia, Cotoneaster microphylla* (B), *Daphne cneorum* (B), *Hypericum moserianum, Juniperus communis depressa* (C), *Juniperus prostrata* (C).

SHRUBS TO 4 FEET. *Cotoneaster simonsi, Daphne mezereum, Evonymus radicans* (B), *Spiræa bumalda, Spiræa bumalda* Anthony Waterer, *Spiræa japonica, Spiræa tomentosa.*

SHRUBS TO 6 FEET. *Berberis aquifolium* (B), *Berberis thunbergi, Callicarpa americana, Caryopteris mastacanthus, Cornus sanguinea, Cydonia japonica, Diervilla rosea, Hydrangea arborescens, Hydrangea arborescens sterilis, Jasminum nudiflorum, Juniperus sabina* (C), *Kerria japonica, Ligustrum ibota regelianum, Lonicera morrowi, Nandina japonica* (B), *Rhodotypos kerrioides, Rosa rugosa, Spiræa prunifolia, Spiræa thunbergi, Spiræa vanhouttei, Tamarix odessana.*

SHRUBS TO 8 FEET. *Abelia grandiflora* (H), *Aucuba japonica* (B), *Berberis ilicifolia* (B), *Cephalotaxus pedunculata* (C), *Datura arborea* (H), *Elæagnus longipes, Elæagnus macrophylla* (B), *Elæagnus pungens* (B), *Escallonia montevidensis* (B), *Evonymus alatus, Evonymus japonicus* (B), *Forsythia suspensa, Forsythia viridissima, Ilex verticillata, Ligustrum sinense, Lonicera fragrantissima, Philadelphus lewisi.*

SHRUBS TO 10 FEET. *Acanthopanax pentaphyllum, Callistemon lanceolatus, Ceanothus thyrsiflorus, Cytisus scoparius, Hibiscus syriacus, Hydrangea paniculata, Ligustrum ibota, Ligustrum japonicum* (B), *Lonicera ruprechtiana, Lonicera tatarica, Lycium chinense, Myrtus communis* (B), *Philadelphus coronarius, Philadelphus inodorus, Physocarpus opulifolius, Pittosporum tobira* (B), *Spartium junceum, Syringa chinensis, Syringa persica, Tamarix gallica, Thuja occidentalis* (dwarf varieties) (C).

SHRUBS TO 15 FEET. *Colutea arborescens, Cornus florida, Cornus mas, Cratægus oxyacantha, Heteromeles arbutifolia* (B), *Hydrangea paniculata grandiflora, Ilex vomitoria* (B), *Juniperus scopulorum* (C), *Ligustrum amurense, Nerium oleander* (B), *Osmanthus aquifolium* (B), *Osmanthus fragrans* (B), *Prunus pissardi, Punica granatum* (B), *Pyracantha coccinea lalandi* (H), *Salix caprea, Sambucus canadensis, Sambucus pubens, Syringa vulgaris.*

SHRUBS OR SMALL TREES TO 20 FEET. *Camellia japonica, Caragana arborescens, Coprosma baueri* (tall form) (B), *Elæagnus angustifolia, Evonymus atropurpureus, Juniperus virginiana* (C), *Ligustrum lucidum* (B), *Melaleuca decussata, Pittosporum phillyræoides* (B).

SHRUBS OR SMALL TREES TO 25 FEET. *Juniperus*

communis (C), *Juniperus excelsa* (C), *Lagerstræmia indica*, *Lugustrum ovalifolium* (H), *Pittosporum undulatum* (B), *Prunus ilicifolia* (B), *Prunus caroliniana* (B), *Syringa japonica*.

LARGE TREES. London plane, California black walnut, American elm, English elm, valley oak (B), Arizona ash, California sycamore, Oregon ash, Koelreuteria, and, in the warmer parts, Washington palms (P).

PLANTS FOR REGION 4

SHRUBS TO 2 FEET OR UNDER. *Berberis repens* (B), *Calluna vulgaris* (B), *Ceanothus americanus*, *Chamædaphne calyculata* (B), *Cotoneaster buxifolia*, *Cotoneaster microphylla* (B), *Juniperus prostrata* (C), *Juniperus communis depressa* (C).

SHRUBS TO 4 FEET. *Azalea amæna* (B), *Cotoneaster simonsi*, *Spiræa bumalda*, *Spiræa bumalda* Anthony Waterer, *Spiræa japonica*, *Spiræa tomentosa*, *Symphoricarpos occidentalis*, *Symphoricarpos racemosus*, *Symphoricarpos vulgaris*.

SHRUBS TO 6 FEET. *Azalea nudiflora* (B), *Berberis aquifolium* (B), *Berberis thunbergi*, *Calycanthus floridus*, *Caryopteris mastacanthus*, *Cephalanthus occidentalis*, *Clethra alnifolia*, *Cornus sanguinea*, *Cornus stolonifera flaviramea*, *Cydonia japonica*, *Juniperus sabina* (C), *Ligustrum ibota regelianum*, *Lonicera morrowi*, *Rhodotypos kerrioides*, *Ribes odoratum*, *Rosa rugosa*, *Spiræa prunifolia*, *Spiræa thunbergi*, *Spiræa vanhouttei*, *Staphylea bumalda*.

SHRUBS TO 8 FEET. *Abelia grandiflora* (H), *Elæagnus longipes*, *Evonymus alatus*, *Ilex verticillata*, *Lonicera fragrantissima*, *Philadelphus lewisi*, *Prunus pumila*, *Viburnum americanum*.

SHRUBS TO 10 FEET. *Æsculus parviflora*, *Alnus mitchelliana*, *Amelanchier alnifolia*, *Azalea calendulacea*, *Ceanothus thyrsiflorus*, *Cytisus scoparius*, *Hydrangea paniculata*, *Ligustrum ibota*, *Lonicera ruprechtiana*, *Lonicera tatarica*, *Lycium chinense*, *Philadelphus coronarius*, *Philadelphus inodorus*, *Physocarpus opulifolius*, *Staphylea trifolia*, *Syringa chinensis*, *Thuja occidentalis* (dwarf varieties) (C).

SHRUBS TO 15 FEET. *Chionanthus virginica*, *Colutea arborescens*, *Cornus florida*, *Cornus paniculata*, *Cratægus oxyacantha*, *Hamamelis virginiana*, *Hydrangea paniculata grandiflora*, *Juniperus scopulorum* (C), *Ligustrum amurense*, *Prunus pissardi*, *Pyracantha coccinea lalandi* (H), *Salix caprea*, *Sambucus canadensis*, *Sambucus pubens*, *Syringa vulgaris*.

SHRUBS OR SMALL TREES TO 20 FEET. *Amelanchier oblongifolia*, *Caragana arborescens*, *Elæagnus angustifolia*, *Evonymus atropurpureus*, *Ptelea trifoliata*.

SHRUBS OR SMALL TREES TO 25 FEET. *Amelanchier canadensis*, *Cercis canadensis*, *Juniperus virginiana* (C).

LARGE TREES. London plane, black locust, English elm, Oregon maple, American elm, mossycup oak.

PLANTS FOR REGION 5

SHRUBS TO 2 FEET OR UNDER. *Daphne cneorum* (B).

SHRUBS TO 4 FEET. *Cistus ladaniferus* (B), *Daphne mezereum*, *Spiræa bumalda*, *Spiræa bumalda* Anthony Waterer, *Spiræa japonica*.

SHRUBS TO 6 FEET. *Berberis thunbergi*, *Caryopteris mastacanthus*, *Cornus sanguinea*, *Diervilla rosea*, *Jasminum nudiflorum*, *Ligustrum ibota regelianum*, *Lonicera morrowi*, *Nandina japonica* (B), *Spiræa prunifolia*, *Tamarix odessana*, *Viburnum suspensum*.

SHRUBS TO 8 FEET. *Abelia grandiflora* (H), *Aucuba japonica* (B), *Berberis ilicifolia* (B), *Datura arborea* (H), *Elæagnus longipes*, *Elæagnus macrophylla* (B), *Elæagnus pungens* (B), *Escallonia montevidensis* (B), *Evonymus japonicus* (B), *Forsythia suspensa*, *Forsythia viridissima*, *Ligustrum sinense*, *Lonicera fragrantissima*, *Philadelphus lewisi*, *Viburnum tinus* (B).

SHRUBS TO 10 FEET. *Acanthopanax pentaphyllum*, *Callistemon lanceolatus*, *Ceanothus thyrsiflorus*, *Cytisus scoparius*, *Hibiscus syriacus*, *Hydrangea paniculata*, *Ligustrum ibota*, *Ligustrum japonicum* (B), *Lonicera ruprechtiana*, *Lonicera tatarica*, *Lycium chinense*, *Pittosporum tobira* (B), *Spartium junceum*, *Syringa chinensis*, *Syringa persica*, *Tamarix gallica*.

SHRUBS TO 15 FEET. *Colutea arborescens*, *Cratægus oxyacantha*, *Heteromeles arbutifolia* (B), *Hydrangea paniculata grandiflora*, *Ligustrum amurense*, *Nerium oleander* (B), *Photinia serrulata* (B), *Punica granatum* (B), *Pyracantha coccinea lalandi* (H), *Sambucus canadensis*, *Sambucus pubens*, *Syringa vulgaris*.

SHRUBS OR SMALL TREES TO 20 FEET. *Camellia japonica* (B), *Caragana arborescens*, *Corosma baueri* (tall varieties) (B), *Elæagnus angustifolia*, *Jasminum humile* (B), *Ligustrum lucidum* (B), *Melaleuca decussata*, *Pittosporum phillyræoides* (B), *Thea sinensis* (B).

SHRUBS OR SMALL TREES TO 25 FEET. *Lagerstræmia indica*, *Ligustrum ovalifolium* (H), *Pittosporum undulatum* (B), *Prunus ilicifolia* (B), *Prunus caroliniana* (B), *Syringa japonica*.

LARGE TREES. Valley oak (B), California pepper tree, rubber tree (B), Arizona cypress (C), Guadalupe cypress (C), Monterey cypress (C), red gum (*Eucalyptus longirostris*) (B), manna gum (*Eucalyptus viminalis*) (B), and many palms.

PLANTS FOR REGION 6

SHRUBS TO 2 FEET OR UNDER. *Berberis repens* (B), *Calluna vulgaris* (B), *Ceanothus americanus*, *Cotoneaster microphylla* (B), *Juniperus communis depressa* (C), *Juniperus prostrata* (C), *Rhus aromatica*.

SHRUBS TO 4 FEET. *Daphne mezereum*, *Deutzia gracillis*, *Spiræa bumalda*, *Spiræa bumalda* Anthony Waterer, *Spiræa japonica*, *Spiræa tomentosa*, *Symphoricarpos occidentalis*, *Symphoricarpos racemosus*, *Symphoricarpos vulgaris*, *Viburnum acerifolium*.

SHRUBS TO 6 FEET. *Azalea nudiflora* (B), *Berberis aquifolium* (B), *Calycanthus floridus*, *Caryopteris mastacanthus*, *Cephalanthus occidentalis*, *Celthra alnifolia*, *Cornus sanguinea*, *Cornus stolonifera flaviramea*, *Cydonia japonica*, *Diervilla rosea*, *Juniperus sabina* (C), *Ligustrum ibota regelianum*, *Lonicera morrowi*, *Rhodotypos kerrioides*, *Ribes odoratum*, *Ribes americanum*, *Rosa carolina*, *Rosa rugosa*, *Rosa setigera*, *Spiræa prunifolia*, *Spiræa thunbergi*, *Spiræa vanhouttei*, *Staphylea bumalda*, *Stephanandra flexuosa*, *Tamarix odessana*.

SHRUBS TO 8 FEET. *Evonymus alatus*, *Forsythia suspensa*, *Ilex verticillata*, *Lonicera fragrantissima*, *Philadelphus lewisi*, *Viburnum americanum*.

SHRUBS TO 10 FEET. *Alnus mitchelliana*, *Amelanchier alnifolia*, *Cytisus scoparius*, *Exochorda grandiflora* *Hibiscus syriacus*, *Hydrangea paniculata*, *Ligustrum ibota*, *Lonicera ruprechtiana*, *Lonicera tatarica*, *Philadelphus coronarius*, *Philadelphus inodorus*, *Physocarpus opulifolius*, *Staphylea trifolia*, *Syringa chinensis*, *Tamarix*

gallica, Thuja occidentalis (dwarf varieties) (C), *Viburnum opulus.*

Shrubs to 15 Feet. *Colutea arborescens, Cornus florida, Cornus paniculata, Cratægus oxyacantha, Hamamelis virginiana, Hydrangea paniculata grandiflora, Juniperus scopulorum* (C), *Ligustrum amurense, Pyracantha coccinea lalandi* (H), *Salix caprea, Sambucus canadensis, Sambucus pubens, Syringa vulgaris.*

Shrubs or Small Trees to 20 Feet. *Amelanchier oblongifolia, Caragana arborescens, Elæagnus angustifolia, Evonymus atropurpureus, Ptelea trifoliata.*

Shrubs or Small Trees to 25 Feet. *Amelanchier canadensis, Cercis canadensis, Cratægus crusgalli, Juniperus communis* (C), *Juniperus virginiana* (C), *Styrax japonica, Syringa japonica.*

Large Trees. London plane, English elm, European linden, green ash, black locust, European ash, white ash, Norway maple. red oak.

PLANTS FOR REGION 7

Shrubs to 2 Feet or Under. *Berberis repens* (B), *Calluna vulgaris* (B), *Ceanothus americanus, Juniperus communis depressa* (C), *Juniperus prostrata* (C), *Rhus aromatica.*

Shrubs to 4 Feet. *Spiræa bumalda, Spiræa bumalda* Anthony Waterer, *Spiræa japonica, Spiræa tomentosa, Symphoricarpos occidentalis, Symphoricarpos racemosus, Symphoricarpos vulgaris, Viburnum acerifolium.*

Shrubs to 6 Feet. *Azalea nudiflora, Berberis aquifolium* (B), *Cephalanthus occidentalis, Clethra alnifolia, Cornus sanguinea, Cornus stolonifera flaviramea, Cydonia japonica, Juniperus sabina* (C), *Ligustrum ibota regelianum, Lonicera morrowi, Rhodotypos kerrioides, Ribes americanum, Ribes odoratum, Rosa carolina, Rosa rugosa, Spiræa prunifolia, Spiræa thunbergi, Spiræa vanhouttei, Staphylea bumalda, Tamarix odessana.*

Shrubs to 8 Feet. *Ilex verticillata, Philadelphus lewisi, Viburnum americanum.*

Shrubs to 10 Feet. *Alnus mitchelliana, Amelanchier alnifolia, Cytisus scoparius, Hydrangea paniculata, Ligustrum ibota, Lonicera ruprechtiana, Lonicera tatarica, Philadelphus coronarius, Philadelphus inodorus, Physocarpus opulifolius, Staphylea trifolia, Syringa chinensis, Tamarix gallica, Viburnum opulus.*

Shrubs to 15 Feet. *Cornus florida, Cornus paniculata, Cratægus oxyacantha, Hamamelis virginiana, Hydrangea paniculata grandiflora, Juniperus scopulorum* (C), *Ligustrum amurense, Salix caprea, Sambucus canadensis Sambucus pubens, Syringa vulgaris.*

Shrubs or Small Trees to 20 Feet. *Amelanchier oblongifolia, Caragana arborescens, Elæagnus angustifolia, Evonymus atropurpureus, Ptelea trifoliata.*

Shrubs or Small Trees to 25 Feet. *Amelanchier canadensis, Cercis canadensis, Cratægus crusgalli, Juniperus communis* (C), *Juniperus virginiana* (C).

Large Trees. Green ash, thornless honey locust, black locust, American elm, Norway maple, sycamore maple, cottonwood, Carolina poplar, silver poplar.

PLANTS FOR REGION 8

Shrubs to 2 Feet or Under. *Berberis repens* (B), *Ceanothus americanus, Juniperus communis depressa* (C), *Juniperus prostrata* (C).

Shrubs to 4 Feet. *Spiræa bumalda, Spiræa bumalda* Anthony Waterer, *Spiræa japonica, Spiræa tomentosa, Symphoricarpos occidentalis, Symphoricarpos racemosus, Symphoricarpos vulgaris.*

Shrubs to 6 Feet. *Azalea nudiflora, Berberis aquifolium* (B), *Cornus sanguinea, Cornus stolonifera flaviramea, Cyndonia japonica, Juniperus sabina* (C), *Ligustrum ibota regelianum, Rhodotypos kerrioides, Ribes odoratum, Spiræa prunifolia, Spiræa thunbergi, Spiræa vanhouttei, Staphylea bumalda, Tamarix odessana.*

Shrubs to 8 Feet. *Elæagnus longipes, Ilex verticillata, Philadelphus lewisi, Staphylea trifolia.*

Shrubs to 10 Feet. *Amelanchier alnifolia, Cytisus scoparius, Hydrangea paniculata, Ligustrum ibota, Lonicera ruprechtiana, Lonicera tatarica, Philadelphus corona, rius, Philadelphus inodorous, Physocarpus opulifolius-Syringa chinensis, Tamarix gallica.*

Shrubs to 15 Feet. *Cornus florida, Cornus paniculata, Cratægus oxyacantha, Hamamelis virginiana, Hydrangea paniculata grandiflora, Juniperus scopulorum* (C), *Ligustrum amurense, Sambucus canadensis, Sambucus pubens, Syringa vulgaris.*

Shrubs or Small Trees to 20 Feet. *Amelanchier oblongifolia, Caragana arborescens, Elæagnus angustifolia, Evonymus atropurpureus, Ptelea trifoliata.*

Shrubs or Small Trees to 25 Feet. *Amelanchier canadensis, Cratægus crusgalli, Juniperus communis* (C), *Juniperus virginiana* (C).

Large Trees. Green ash, honey locust, black locust.

PLANTS FOR REGION 9

Shrubs to 2 Feet or Under. *Berberis repens* (B).

Shrubs to 4 Feet. *Spiræa bumalda, Spiræa bumalda* Anthony Waterer, *Spiræa japonica, Spiræa tomentosa, Symphoricarpos occidentalis.*

Shrubs to 6 Feet. *Berberis aquifolium* (B), *Cephalanathus occidentalis, Cornus sanguinea, Cornus stolonifera flaviramea, Cydonia japonica, Ligustrum ibota regelianum, Spiræa prunifolia, Spiræa thunbergi. Spiræa vanhouttei, Tamarix odessana.*

Shrubs to 8 Feet. *Elæagnus longipes, Ligustrum ibota, Philadelphus lewisi.*

Shrubs to 10 Feet. *Amelanchier alnifolia, Cytisus scoparius, Philadelphus coronarius, Philadelphus inodorus, Physocarpus opulifolius, Syringa chinensis, Tamarix gallica.*

Shrubs to 15 Feet. *Cornus florida, Cratægus oxyacantha, Ligustrum amurense, Sambucus pubens, Syringa vulgaris.*

Shrubs or Small Trees to 20 Feet. *Amelanchier oblongifolia, Caragana arborescens, Elæagnus angustifolia, Evonymus atropurpureus.*

Large Trees. Green ash, thornless honey locust, black locust, Chinese elm, mossycup oak, white oak, cottonwood.

PLANTS FOR REGION 10

Shrubs to 4 Feet. *Spiræa bumalda* Anthony Waterer, *Spiræa japonica.*

Shrubs to 6 Feet. *Caryopteris mastacanthus, Tamarix odessana.*

Shrubs to 8 Feet. *Datura arborea* (H), *Elæagnus longipes, Ligustrum sinense.*

Shrubs to 10 Feet. *Callistemon lanceolatus, Ceanothus thyrsiflorus, Cytisus scoparius, Hibiscus syriacus,*

Pittosporum tobira (B), *Spartium junceum*, *Tamarix gallica*.

SHRUBS OR SMALL TREES TO 20 FEET. *Elæagnus angustifolia*, *Melaleuca decussata*, *Pittosporum phillyræoides* (B).

SHRUBS OR SMALL TREES TO 25 FEET. *Ligustrum ovalifolium* (H), *Pittosporum undulatum* (B).

LARGE TREES. Athel (*Tamarix articulata*), desert gum (*Eucalyptus rudis*) (B), red gum (*Eucalyptus longirostris*) (B), red box (*Eucalyptus polyanthemos*) (B), Parkinsonia, Texas palmetto (P), Washington palms (P).

PLANTS FOR REGION 11

SHRUBS TO 2 FEET OR UNDER. *Berberis repens*.

SHRUBS TO 4 FEET. *Spiræa bumalda*, *Spiræa bumalda* Anthony Waterer, *Spiræa japonica*, *Spiræa tomentosa*.

SHRUBS TO 6 FEET. *Berberis aquifolium*, *Caryopteris mastacanthus*, *Cephalanthus occidentalis*, *Cornus sanguinea*, *Spiræa prunifolia*, *Spiræa thunbergi*, *Spiræa vanhouttei*, *Tamarix odessana*.

SHRUBS TO 8 FEET. *Datura arborea* (H), *Ligustrum sinense*.

SHRUBS TO 10 FEET. *Ceanothus thyrsiflorus*, *Cytisus scoparius*, *Hibiscus syriacus*, *Lonicera ruprechtiana*, *Lonicera tatarica*, *Philadelphus coronarius*, *Physocarpus opulifolius*, *Syringa chinensis*, *Tamarix gallica*.

SHRUBS TO 15 FEET. *Conrus florida*, *Sambucus pubens*.

SHRUBS OR SMALL TREES TO 20 FEET. *Caragana arborescens*, *Elæagnus angustifolia*, *Melaleuca decussata*.

SHRUBS OR SMALL TREES TO 25 FEET. *Ligustrum ovalifolium*.

LARGE TREES. Thornless honey locust, green ash, black locust, hackberry, Mississippi hackberry, Chinese elm, cottonwood, Parkinsonia, Texas palmetto (P).

PLANTS FOR REGION 12

SHRUBS TO 2 FEET OR UNDER. *Berberis repens*, *Ceanothus americanus*, *Juniperus communis depressa* (C), *Juniperus prostrata* (C), *Rhus aromatica*.

SHRUBS TO 4 FEET. *Spiræa bumalda*, *Spiræa bumalda* Anthony Waterer, *Spiræa japonica*, *Spiræa tomentosa*, *Symphoricarpos occidentalis*, *Symphoricarpos racemosus*, *Symphoricarpos vulgaris*.

SHRUBS TO 6 FEET. *Azalea nudiflora*, *Clethra alnifolia*, *Cornus alba*, *Cornus sanguinea*, *Cornus stolonifera flaviramea*, *Juniperus sabina* (C), *Ligustrum ibota regelianum*, *Ribes odoratum*, *Spiræa prunifolia*, *Staphylea bumalda*.

SHRUBS TO 8 FEET. *Ilex verticillata*, *Philadelphus lewisi*, *Viburnum americanum*.

SHRUBS TO 10 FEET. *Alnus mitchelliana*, *Amelanchier alnifolia*, *Ligustrum ibota*, *Philadelphus coronarius*, *Philadelphus inodorus*, *Physocarpus opulifolius*, *Pinus montana mughus* (C), *Staphylea trifolia*, *Syringa chinensis*.

SHRUBS TO 15 FEET. *Cornus florida*, *Hamamelis virginiana*, *Juniperus scopulorum* (C), *Ligustrum amurense*, *Sambucus canadensis*, *Sambucus pubens*, *Syringa vulgaris*.

SHRUBS OR SMALL TREES TO 20 FEET. *Amelanchier oblongifolia*, *Caragana arborescens*, *Elæagnus angustifolia*, *Ptelea trifoliata*.

SHRUBS OR SMALL TREES TO 25 FEET. *Amelanchier canadensis*, *Juniperus chinensis* (C), *Juniperus communis* (C), *Juniperus virginiana* (C).

LARGE TREES. Green ash, hackberry, cottonwood, silver poplar, narrow-leaf cottonwood.

PLANTS FOR REGION 13

SHRUBS TO 2 FEET OR UNDER. *Berberis repens* (B), *Ceanothus americanus*, *Juniperus communis depressa* (C), *Juniperus prostrata* (C), *Rhus aromatica*.

SHRUBS TO 4 FEET. *Spiræa bumalda*, *Spiræa bumalda* Anthony Waterer, *Spiræa japonica*, *Spiræa tomentosa*, *Symphoricarpos occidentalis*, *Symphoricarpos racemosus*, *Symphoricarpos vulgaris*.

SHRUBS TO 6 FEET. *Azalea nudiflora*, *Berberis aquifolium* (B), *Calycanthus floridus*, *Cephalanthus occidentalis*, *Clethra alnifolia*, *Cornus alba*, *Cornus sanguinea*, *Cornus stolonifera flaviramea*, *Juniperus sabina* (C), *Ligustrum ibota regelianum*, *Ribes americanum*, *Ribes odoratum*, *Spiræa prunifolia*, *Staphylea bumalda*.

SHRUBS TO 8 FEET. *Elæagnus longipes*, *Ilex verticillata*, *Philadelphus lewisi*, *Viburnum americanum*.

SHRUBS TO 10 FEET. *Alnus mitchelliana*, *Amelanchier alnifolia*, *Ligustrum ibota*, *Philadelphus coronarius*, *Philadelphus inodorus*, *Physocarpus opulifolius*, *Pinus montana mughus* (C), *Staphylea trifolia*, *Syringa chinensis*.

SHRUBS TO 15 FEET. *Cornus florida*, *Hamamelis virginiana*, *Juniperus scopulorum* (C), *Ligustrum amurense*, *Sambucus canadensis*, *Sambucus pubens*, *Syringa vulgaris*.

SHRUBS OR SMALL TREES TO 20 FEET. *Amelanchier oblongifolia*, *Caragana arborescens*, *Elæagnus angustifolia*, *Evonymus atropurpureus*, *Ptelea trifoliata*.

SHRUBS OR SMALL TREES TO 25 FEET. *Amelanchier canadensis*, *Juniperus chinensis* (C), *Juniperus communis* (C), *Juniperus virginiana* (C).

LARGE TREES. Green ash, Koelreuteria, cottonwood and other poplars, black locust, hackberry, thornless honey locust, ash-leaf maple (as a last resort).

PLANTS FOR REGION 14

SHRUBS TO 2 FEET OR UNDER. *Berberis repens*, *Ceanothus americanus*, *Juniperus communis depressa* (C), *Juniperus prostrata* (C), *Rhus aromatica*.

SHRUBS TO 4 FEET. *Spiræa bumalda*, *Spiræa bumalda* Anthony Waterer, *Spiræa japonica*, *Spiræa tomentosa*, *Symphoricarpos occidentalis*, *Symphoricarpos racemosus*, *Symphoricarpos vulgaris*.

SHRUBS TO 6 FEET. *Azalea nudiflora*, *Berberis aquifolium*, *Calycanthus floridus*, *Cephalanthus occidentalis*, *Clethra alnifolia*, *Cornus alba*, *Cornus sanguinea*, *Cornus stolonifera flaviramea*, *Juniperus sabina* (C), *Ligustrum ibota regelianum*, *Ribes americanum*, *Ribes odoratum*, *Spiræa prunifolia*, *Spiræa thunbergi*, *Spiræa vanhouttei*, *Staphylea bumalda*.

SHRUBS TO 8 FEET. *Elæagnus longipes*, *Ilex verticillata*, *Philadelphus lewisi*, *Viburnum americanum*.

SHRUBS TO 10 FEET. *Alnus mitchelliana*, *Amelanchier alnifolia*, *Ligustrum ibota*, *Philadelphus coronarius*, *Philadelphus inodorus*, *Physocarpus opulifolius*, *Pinus montana mughus* (C), *Staphylea trifolia*, *Viburnum opulus*.

SHRUBS TO 15 FEET. *Cornus florida*, *Hamamelis vir-*

giniana, Juniperus scopulorum (C), *Ligustrum amurense, Symbucus canadensis, Sambucus pubens, Syringa vulgaris.*

Shrubs or Small Trees to 20 Feet. *Amelanchier oblongifolia, Caragana arborescens, Elæagnus angustifolia, Evonymus atropurpureus, Ptelea trifoliata.*

Shrubs or Small Trees to 25 Feet. *Amelanchier canadensis, Juniperus chinensis* (C), *Juniperus communis* (C), *Juniperus virginiana* (C).

Large Trees. Green ash, black locust, hackberry, thornless honey locust, Koelreuteria, cottonwood and other poplars.

PLANTS FOR REGION 15

Shrubs to 2 Feet or Under. *Berberis repens* (B).

Shrubs to 4 Feet. *Spiræa bumalda, Spiræa bumalda* Anthony Waterer, *Spiræa japonica, Spiræa tomentosa, Symphoricarpos occidentalis, Symphoricarpos racemosus.*

Shrubs to 6 Feet. *Berberis thunbergi, Cornus alba, Cornus sanguinea, Cornus stolonifera flaviramea, Ligustrum ibota regelianum, Ribes odoratum, Spiræa prunifolia, Tamarix odessana.*

Shrubs to 8 Feet. *Viburnum americanum.*

Shrubs to 10 Feet. *Alnus mitchelliana, Amelanchier alnifolia, Cytisus scoparius, Ligustrum ibota, Physocarpus opulifolius, Syringa chinensis, Tamarix gallica.*

Shrubs to 15 Feet. *Cornus florida, Cornus paniculata, Hamamelis virginiana, Ligustrum amurense, Sambucus canadensis, Sambucus pubens.*

Shrubs or Small Trees to 20 Feet. *Amelanchier oblongifolia, Elæagnus angustifolia, Evonymus atropurpureus.*

Shrubs or Small Trees to 25 Feet. *Juniperus virginiana* (C).

Large Trees. Green ash, hackberry, Chinese elm, Koelreuteria, cottonwood (staminate form), Carolina poplar, Norway poplar, and ash-leaf maple (when other trees will not succeed).

PLANTS FOR REGION 16

Shrubs to 2 Feet or Under. *Berberis repens* (B), *Juniperus communis depressa* (C), *Juniperus prostrata* (C), *Rhus aromatica.*

Shrubs to 4 Feet. *Spiræa bumalda, Spiræa bumalda* Anthony Waterer, *Spiræa japonica, Spiræa tomentosa, Symphoricarpos occidentalis, Symphoricarpos racemosus, Symphoricarpos vulgaris, Viburnum acerifolium.*

Shrubs to 6 Feet. *Berberis aquifolium* (B), *Berberis thunbergi, Caryopteris mastacanthus, Cephalanthus occidentalis, Cornus alba, Cornus sanguinea, Cornus stolonifera flaviramea, Cydonia japonica, Diervilla rosea, Juniperus sabina* (C), *Kerria japonica, Ligustrum ibota regelianum, Ribes americanus, Ribes odoratum, Rosa carolina, Rosa rugosa, Rosa setigera, Spiræa prunifolia, Spiræa thunbergi, Spiræa vanhouttei, Staphylea bumalda, Stephanandra flexuosa, Tamarix odessana.*

Shrubs to 8 Feet. *Elæagnus longipes, Forsythia suspensa, Forsythia viridissima, Philadelphus lewisi, Viburnum americanum.*

Shrubs to 10 Feet. *Alnus mitchelliana, Amelanchier alnifolia, Cytisus scoparius, Hibiscus syriacus, Hydrangea paniculata, Ligustrum ibota, Lonicera ruprechtiana, Lonicera tatarica, Philadelphus coronarius, Philadelphus inodorus, Physocarpus opulifolius, Staphylea trifolia, Syringa chinensis, Tamarix gallica, Thuja occidentalis* (dwarf varieties) (C), *Viburnum opulus.*

Shrubs to 15 Feet. *Chionanthus virginica, Cornus florida, Colutea arborescens, Cornus mas, Cornus paniculata, Cratægus oxyacantha, Hamamelis virginiana, Hydrangea paniculata grandiflora, Ligustrum amurense, Salix caprea, Sambucus canadensis, Sambucus pubens.*

Shrubs or Small Trees to 20 Feet. *Amelanchier oblongifolia, Caragana arborescens, Elæagnus angustifolia, Evonymus atropurpureus.*

Shrubs or Small Trees to 25 Feet. *Cercis canadensis, Cratægus crusgalli, Juniperus chinensis* (C), *Juniperus communis* (C), *Juniperus excelsa* (C), *Juniperus virginiana* (C), *Syringa japonica.*

Large Trees. Green ash, thornless honey locust, hackberry, black locust, Chinese elm, American elm, Mississippi hackberry, cottonwood, Austrian pine (C), Scotch pine (C), Himalayan cedar (C), Arizona cypress (C).

PLANTS FOR REGION 17

Shrubs to 6 Feet. *Caryopteris mastacanthus, Ribes odoratum, Tamarix odessana.*

Shrubs to 8 Feet. *Datura arborea* (H), *Elæagnus longipes, Ligustrum sinense.*

Shrubs to 10 Feet. *Amelanchier alnifolia, Acanthopanax pentaphyllum, Ceanothus thyrsiflorus, Cytisus scoparius, Spartium junceum, Syringa chinensis, Tamarix gallica.*

Shrubs to 15 Feet. *Hamamelis virginiana, Sambucus canadensis.*

Shrubs or Small Trees to 20 Feet. *Amelanchier oblongifolia, Elæagnus angustifolia, Melaleuca decussata.*

Shrubs or Small Trees to 25 Feet. *Juniperus communis* (C), *Ligustrum ovalifolium* (H).

Large Trees. Parkinsonia, Chinese elm, Texas palmetto (P), Carolina palmetto (P), Canary Island date palm (P), Washington palms (P), athel, cottonwood.

PLANTS FOR REGION 18

Shrubs to 2 Feet or Under. *Berberis repens, Ceanothus americanus.*

Shrubs to 4 Feet. *Spiræa bumalda, Spiræa bumalda* Anthony Waterer, *Spiræa japonica, Spiræa tomentosa, Symphoricarpos occidentalis, Symphoricarpos racemosus, Symphoricarpos vulgaris, Viburnum acerifolium.*

Shrubs to 6 Feet. *Berberis thunbergi, Cornus alba, Cornus sanguinea, Cornus stolonifera flaviramea, Ligustrum ibota regelianum, Ribes americanum, Ribes odoratum, Rosa carolina, Rosa rugosa, Spiræa prunifolia, Spiræa thunbergi, Staphylea bumalda, Tamarix odessana.*

Shrubs to 8 Feet. *Hydrangea paniculata, Philadelphus lewisi, Viburnum americanum, Viburnum dentatum.*

Shrubs to 10 Feet. *Alnus mitchelliana, Amelanchier alnifolia, Cytisus scoparius, Ligustrum ibota, Physocarpus opulifolius, Staphylea trifolia, Syringa chinensis, Tamarix gallica.*

Shrubs to 15 Feet. *Cornus florida, Cornus paniculata, Hamamelis virginiana, Hydrangea paniculata grandiflora, Ligustrum amurense, Sambucus canadensis, Sambucus pubens, Syringa vulgaris.*

Shrubs or Small Trees to 20 Feet. *Amelanchier*

oblongifolia, Caragana arborescens, Elæagnus angustifolia, Evonymus atropurpureus, Ptelea trifoliata.

Shrubs or Small Trees to 25 Feet. *Amelanchier canadensis, Juniperus communis* (C), *Juniperus virginiana* (C).

Large Trees. Green ash, black locust, black ash, mossycup oak, Chinese elm, Austrian pine (C), Scotch pine (C), Black Hills spruce (C), red cedar (C), arborvitæ (C). Where the above will not grow use ash-leaf maple and willow.

PLANTS FOR REGION 19

Shrubs to 2 Feet or Under. *Berberis repens* (B), *Ceanothus americanus, Juniperus communis depressa* (C), *Juniperus prostrata* (C), *Rhus aromatica.*

Shrubs to 4 Feet. *Spiræa bumalda, Spiræa bumalda* Anthony Waterer, *Spiræa japonica, Spiræa tomentosa, Symphoricarpos occidentalis, Symphoricarpos racemosus, Symphoricarpos vulgaris, Viburnum acerifolium.*

Shrubs to 6 Feet. *Berberis aquifolium* (B), *Berberis thunbergi, Calycanthus floridus, Caryopteris mastacanthus, Cephalanthus occidentalis, Clethra alnifolia, Cornus alba, Cornus sanguinea, Cornus stolonifera flaviramea, Cydonia japonica, Diervilla rosea, Hydrangea arborescens, Hydrangea arborescens sterilis, Juniperus sabina, Kerria japonica, Ligustrum ibota regelianum, Ribes americanum, Ribes odoratum, Rosa carolina, Rosa rugosa, Rosa setigera, Spiræa prunifolia, Spiræa thunbergi, Spiræa vanhouttei, Staphylea bumalda, Stephanandra flexuosa, Tamarix odessana.*

Shrubs to 8 Feet. *Elæagnus longipes, Philadelphus lewisi, Viburnum americanum, Viburnum dentatum.*

Shrubs to 10 Feet. *Alnus mitchelliana, Amelanchier alnifolia, Cytisus scoparius, Exorchorda grandiflora, Hibiscus syriacus, Hydrangea paniculata, Ligustrum ibota, Lonicera ruprechtiana, Lonicera tatarica, Philadelphus coronarius, Philadelphus inodorus, Physocarpus opulifolius, Staphylea trifolia, Syringa chinensis, Tamarix gallica, Thuja occidentalis* (dwarf varieties) (C), *Viburnum opulus.*

Shrubs to 15 Feet. *Chionanthus virginica, Colutea arborescens, Cornus florida, Cornus mas, Cornus paniculata, Hamamelis virginiana, Hydrangea paniculata grandiflora, Ligustrum amurense, Salix caprea, Sambucus canadensis, Sambucus pubens, Syringa vulgaris.*

Shrubs or Small Trees to 20 Feet. *Amelanchier oblongifolia, Caragana arborescens, Elæagnus angustifolia, Evonymus atropurpureus, Ptelea trifoliata.*

Shrubs or Small Trees to 25 Feet. *Amelanchier canadensis, Cratægus crusgalli, Juniperus chinensis* (C), *Juniperus communis* (C), *Juniperus excelsa* (C), *Juniperus virginiana* (C), *Syringa japonica.*

Large Trees. Mossycup oak, Chinese elm, Koelreuteria, hackberry, black locust, thornless honey locust, green ash, red oak, pin oak, sycamore, pecan, Austrian pine (C), Scotch pine (C), red cedar (C), arborvitæ (C).

PLANTS FOR REGION 20

Shrubs to 2 Feet or Under. *Berberis repens, ceanothus americanus, Cotoneaster buxifolia, Cotoneaster microphylla* (B), *Hypericum moserianum* (B), *Juniperus communis depressa* (C), *Juniperus prostrata* (C), *Rhus aromatica.*

Shrubs to 4 Feet. *Cotoneaster simonsi, Deutzia gracilis, Spiræa bumalda, Spiræa bumalda* Anthony Waterer, *Spiræa japonica, Spiræa tomentosa, Symphoricarpos occidentalis, Symphoricarpos vulgaris, Viburnum acerifolium.*

Shrubs to 6 Feet. *Berberis aquifolium* (B), *Berberis thunbergi, Calycanthus floridus, Caryopteris mastacanthus, Cephalanthus occidentalis, Clethra alnifolia, Cornus alba, Cornus sanguinea, Cornus stolonifera flaviramea, Deutzia crenata* (Pride of Rochester), *Juniperus sabina* (C), *Kerria japonica, Ligustrum ibota regelianum, Rhodotypos kerrioides, Ribes americanum, Ribes odoratum, Rosa carolina, Rosa rugosa, Rosa setigera, Rosa virginiana, Spiræa prunifolia, Spiræa thunbergi, Spiræa vanhouttei, Staphylea bumalda, Stephanandra flexuosa, Tamarix odessana.*

Shrubs to 8 Feet. *Abelia grandiflora* (H), *Buddleia davidi, Elæagnus longipes, Escallonia montevidensis* (B), *Evonymus alatus, Forsythia suspensa, Forsythia viridissima, Philadelphus lewisi, Viburnum americanum, Viburnum dentatum, Viburnum nudum.*

Shrubs to 10 Feet. *Æsculus parviflora, Alnus mitchelliana, Acanthopanax pentaphyllum, Cercis japonica, Cytisus scoparius, Exochorda grandiflora, Hydrangea paniculata, Ligustrum ibota, Lonicera ruprechtiana, Lonicera tatarica, Philadelphus coronarius, Philadelphus inodorus, Physocarpus opulifolius, Rhamnus cathartica, Staphylea trifolia, Syringa chinensis, Tamarix gallica, Thuja occidentalis* (dwarf varieties) (C), *Viburnum opulus.*

Shrubs to 15 Feet. *Amorpha fruticosa, Chionanthus virginica, Colutea arborescens, Cornus florida, Cornus mas, Cornus paniculata, Cratægus oxyacantha, Hamamelis virginiana, Hydrangea paniculata grandiflora, Ligustrum amurense, Rhus glabra, Salix caprea, Sambucus canadensis, Sambucus pubens, Syringa vulgaris, Viburnum prunifolium.*

Shrubs or Small Trees to 20 Feet. *Amelanchier oblongifolia, Aralia spinosa, Caragana arborescens, Elæagnus angustifolia, Evonymus atropurpureus, Ptelea trifoliata.*

Shrubs or Small Trees to 25 Feet. *Cercis canadensis, Cratægus crusgalli, Juniperus chinensis* (C), *Styrax japonica.*

Large Trees. Pecan, Mississippi hackberry, winged elm, Chinese elm, mossycup oak, Koelreuteria, London plane, sycamore, willow oak, Texas oak, green ash, black walnut, live oak (B), red cedar (C), Himalayan cedar (C), Arizona cypress (C).

PLANTS FOR REGION 21

Shrubs to 2 Feet or Under. *Berberis repens, Ceanothus americanus, Rhus aromatica.*

Shrubs to 4 Feet. *Spiræa bumalda, Spiræa bumalda* Anthony Waterer, *Spiræa japonica, Spiræa tomentosa, Symphoricarpos occidentalis, Symphoricarpos racemosus, Symphoricarpos vulgaris, Viburnum acerifolium.*

Shrubs to 6 Feet. *Berberis thunbergi, Cornus alba, Cornus sanguinea, Cornus stolonifera flaviramea, Cydonia japonica, Ligustrum ibota regelianum, Ribes americanum, Ribes odoratum, Rosa carolina, Rosa rubiginosa, Rosa rugosa, Spiræa prunifolia, Spiræa thunbergi, Spiræa vanhouttei, Staphylea bumalda, Tamarix odessana.*

Shrubs to 8 Feet. *Ilex verticillata, Philadelphus lewisi, Viburnum americanum, Viburnum dentatum.*

Shrubs to 10 Feet. *Alnus mitchelliana, Amelanchier alnifolia, Cytisus scoparius, Hydrangea paniculata, Ligustrum ibota, Philadelphus coronarius, Philadelphus inodorus, Physocarpus opulifolius, Staphylea trifolia,*

Syringa chinensis, Tamarix gallica, Viburnum opulus.

Shrubs to 15 Feet. *Cornus florida, Cornus paniculata, Hamamelis virginiana, Hydrangea paniculata grandiflora, Ligustrum amurense, Sambucus canadensis, Sambucus pubens, Syringa vulgaris.*

Shrubs or Small Trees to 20 Feet. *Amelanchier oblongifolia, Caragana arborescens, Elæagnus angustifolia, Evonymus atropurpureus, Ptelea trifoliata.*

Shrubs or Small Trees to 25 Feet. *Amelanchier canadensis, Juniperus virginiana* (C).

Large Trees. Green ash, American elm, mossycup oak, Chinese elm, red oak, blue ash, Austrian pine (C), Scotch pine (C), red cedar (C), arborvitæ (C).

PLANTS FOR REGION 22

Shrubs 2 Feet or Under. *Berberis repens* (B), *Calluna vulgaris* (B), *Ceanothus americanus, Daphne cneorum* (B), *Juniperus communis depressa* (C), *Juniperus prostrata* (C), *Rhus aromatica.*

Shrubs to 4 Feet. *Daphne mezereum, Spiræa bumalda, Spiræa bumalda* Anthony Waterer, *Spiræa japonica, Spiræa tomentosa, Symphoricarpos occidentalis, Symphoricarpos racemosus, Symphoricarpos vulgaris, Viburnum acerifolium.*

Shrubs to 6 Feet. *Azalea nudiflora, Berberis aquifolium* (B), *Berberis thunbergi, Calycanthus floridus, Caryopteris mastacanthus, Cephalanthus occidentalis, Clethra alnifolia, Cornus alba, Cornus stolonifera flaviramea, Cydonia japonica, Diervilla rosea, Hydrangea arborescens, Hydrangea arborescens sterilis, Juniperus sabina* (C), *Kerria japonica, Ligustrum ibota regelianum, Rhodotypos kerrioides, Ribes americanum, Ribes odoratum, Rosa carolina, Rosa rubiginosa, Rosa rugosa, Rosa setigera, Rosa virginiana, Spiræa prunifolia, Spiræa thunbergi, Spiræa vanhouttei, Staphylea bumalda, Stephanandra flexuosa.*

Shrubs to 8 Feet. *Elæagnus longipes, Evonymus alatus, Forsythia suspensa, Forsythia viridissima, Ilex verticillata, Myrica carolinensis* (H), *Philadelphus lewisi, Prunus pumila, Viburnum americanum, Viburnum dentatum, Viburnum nudum, Viburnum tomentosum.*

Shrubs to 10 Feet. *Alnus mitchelliana, Amelanchier alnifolia, Cercis japonica, Cytisus scoparius, Exochorda grandiflora, Hibiscus syriacus, Ligustrum ibota, Ligustrum japonicum* (B), *Lonicera ruprechtiana, Lonicera tatarica, Lycium chinense, Philadelphus coronarius, Philadelphus inodorus, Physocarpus opulifolius, Rhamnus cathartica, Staphylea trifolia, Syringa chinensis, Thuja occidentalis* (dwarf varieties) (C), *Thuja orientalis* (dwarf varieties) (C), *Viburnum opulus.*

Shrubs to 15 Feet. *Amorpha fruticosa, Chionanthus virginica, Colutea arborescens, Cornus florida, Cornus paniculata, Hamamelis virginiana, Hydrangea paniculata grandiflora, Ligustrum amurense, Prunus pissardi, Rhus cotinus, Rhus glabra, Salix caprea, Sambucus canadensis, Sambucus pubens, Syringa vulgaris, Viburnum prunifolium.*

Shrubs or Small Trees to 20 Feet. *Amelanchier oblongifolia, Caragana arborescens, Elæagnus angustifolia, Evonymus atropurpureus, Ptelea trifoliata.*

Shrubs or Small Trees to 25 Feet. *Amelanchier canadensis, Cercis canadensis, Cratægus crusgalli, Juniperus chinensis* (C), *Juniperus excelsa* (C), *Juniperus virginiana* (C), *Styrax japonica, Syringa japonica.*

Large Trees. American elm, red oak, black walnut, sugar maple, sycamore, mossycup oak, white ash, green ash, white oak, Austrian pine (C), Scotch pine (C), arborvitæ (C), red cedar (C).

PLANTS FOR REGION 23

Shrubs to 2 Feet or Under. *Andromeda polifolia* (B), *Berberis repens* (B), *Calluna vulgaris* (B), *Ceanothus americanus, Chamædaphne calyculata* (B), *Rhus aromatica.*

Shrubs to 4 Feet. *Spiræa bumalda, Spiræa bumalda* Anthony Waterer, *Spiræa japonica, Spiræa tomentosa, Symphoricarpos occidentalis, Symphoricarpos racemosus, Symphoricarpos vulgaris, Viburnum acerifolium.*

Shrubs to 6 Feet. *Azalea nudiflora, Berberis aquifolium* (B), *Berberis thunbergi, Calycanthus floridus, Cephalanthus occidentalis, Clethra alnifolia, Cornus alba, Cornus sanguinea, Cornus stolonifera flaviramea, Cydonia japonica, Hydrangea arborescens, Hydrangea arborescens sterilis, Ligustrum ibota regelianum, Rhodotypos kerrioides, Ribes americanum, Ribes odoratum, Rosa carolina, Rosa rubiginosa, Rosa rugosa, Rosa setigera, Rosa virginiana, Spiræa prunifolia, Spiræa thunbergi, Spiræa vanhouttei, Staphylea bumalda, Stephanandra flexuosa.*

Shrubs to 8 Feet. *Elæagnus longipes, Forsythia suspensa, Ilex verticillata, Myrica carolinensis* (H), *Philadelphus lewisi, Prunus pumila, Viburnum americanum, Viburnum dentatum, Viburnum tomentosum.*

Shrubs to 10 Feet. *Alnus mitchelliana, Amelanchier alnifolia, Azalea calendulacea, Cercis japonica, Cytisus scoparius, Hibiscus syriacus, Hydrangea paniculata, Ligustrum ibota, Lonicera ruprechtiana, Lonicera tatarica, Lycium chinense, Philadelphus coronarius, Philadelphus inodorus, Physocarpus opulifolius, Prunus maritima, Staphylea trifolia, Syringa chinensis, Thuja occidentalis* (dwarf varieties) (C), *Thuja orientalis* (dwarf varieties) (C), *Viburnum opulus.*

Shrubs to 15 Feet. *Cornus florida, Cornus mas, Cornus paniculata, Hamamelis virginiana, Hydrangea paniculata grandiflora, Ligustrum amurense, Prunus pissardi, Rhus cotinus, Sambucus canadensis, Sambucus pubens.*

Shrubs or Small Trees to 20 Feet. *Amelanchier oblongifolia, Caragana arborescens, Elæagnus angustifolia, Evonymus atropurpureus, Ptelea trifoliata.*

Shrubs or Small Trees to 25 Feet. *Amelanchier canadensis, Cercis canadensis, Cratægus crusgalli, Juniperus chinensis* (C), *Juniperus virginiana* (C), *Syringa japonica.*

Large Trees. American elm, red oak, mossycup oak, red maple, green ash, basswood, sugar maple, Chinese elm, Norway maple, honey locust, Austrian pine C), arborvitæ (C), white spruce (C), white pine (C).

PLANTS FOR REGION 24

Shrubs to 2 Feet or Under. *Andromeda polifolia* (B), *Berberis repens* (B), *Calluna vulgaris* (B), *Ceanothus americanus, Chamædaphne calyculata* (B), *Daphne cneorum* (B), *Rhus aromatica.*

Shrubs to 4 Feet. *Daphne mezereum, Kalmia angustifolia* (B), *Spiræa bumalda, Spiræa bumalda* Anthony Waterer, *Spiræa japonica, Spiræa tomentosa, Symphoricarpos occidentalis, Symphoricarpos racemosus, Symphoricarpos vulgaris, Viburnum acerifolium.*

Shrubs to 6 Feet. *Azalea nudiflora, Berberis aqui-*

folium (B), *Berberis thunbergi, Calycanthus floridus, Caryopteris mastacanthus, Cephalanthus occidentalis, Clethra alnifolia, Cornus alba, Cornus sanguinea, Cornus stolonifera flaviramea, Cydonia japonica, Diervilla rosea, Hydrangea arborescens, Hydrangea arborescens sterilis, Juniperus squamata, Kalmia latifolia* (B), *Kerria japonica, Ligustrum ibota regelianum, Rhodotypos kerrioides, Ribes americanum, Ribes odoratum, Rosa carolina, Rosa rugosa, Rosa setigera, Rosa virginiana, Spiræa prunifolia, Spiræa thunbergi, Spiræa vanhouttei, Staphylea bumalda, Stephanandra flexuosa.*

Shrubs to 8 Feet. *Cephalotaxus pedunculata* (C), *Elæagnus longipes, Evonymus alatus, Forsythia suspensa, Ilex glabra* (B), *Ilex verticillata, Myrica carolinensis* (H), *Philadelphus lewisi, Prunus pumila, Viburnum americanum, Viburnum dentatum, Viburnum tomentosum.*

Shrubs to 10 Feet. *Alnus mitchelliana, Amelanchier alnifolia, Azalea calendulacea, Cephalotaxus drupacea sinensis* (C), *Cercis japonica, Cytisus scoparius, Exochorda grandiflora, Hibiscus syriacus, Hydrangea paniculata, Ligustrum ibota, Ligustrum japonicum, Lonicera ruprechtiana, Lonicera tatarica, Lycium chinense, Philadelphus coronarius, Philadelphus inodorus, Physocarpus opulifolius, Pinus montana mughus* (C), *Prunus maritima* (C), *Rhamnus cathartica, Staphylea trifolia, Syringa chinensis, Thuja occidentalis* (dwarf varieties) (C), *Thuja orientalis* (dwarf varieties) (C), *Viburnum opulus.*

Shrubs to 15 Feet. *Chionanthus virginica, Colutea arborescens, Cornus florida, Cornus mas, Cornus paniculata, Hamamelis virginiana, Hydrangea paniculata grandiflora, Ligustrum amurense, Prunus pissardi Chamæcyparis pisifera filifera* (C), *Chamæcyparis pisifera* (C), *Chamæcyparis pisifera plumosa* (C), *Chamæcyparis obtusa* (C), *Chamæcyparis pisifera squarrosa* (C), *Rhododendron maximum* (B), *Rhus cotinus, Rhus glabra, Salix caprea, Sambucus canadensis, Sambucus pubens, Syringa vulgaris, Viburnum prunifolium.*

Shrubs or Small Trees to 20 Feet. *Amelanchier oblongifolia, Caragana arborescens, Elæagnus angustifolia, Evonymus atropurpureus, Ptelea trifoliata.*

Shrubs or Small Trees to 25 Feet. *Amelanchier canadensis, Cercis canadensis, Cratægus crusgalli, Juniperus virginiana* (C), *Styrax japonica, Syringa japonica.*

Large Trees. Sugar maple, American elm, red oak, black walnut, basswood, white oak, white ash, mossycup oak, white pine (C), hemlock (C), Austrian pine (C), arborvitæ (C).

PLANTS FOR REGION 25

Shrubs to 2 Feet or Under. *Andromeda polifolia* (B), *Berberis repens* (B), *Calluna vulgaris* (B), *Ceanothus americanus, Chamædaphne calyculata* (B), *Cotoneaster buxifolia, Cotoneaster microphylla* (B), *Daphne cneorum* (B), *Hypericum moserianum* (B), *Juniperus communis depressa* (C), *Juniperus prostrata* (C), *Rhus aromatica.*

Shrubs to 4 Feet. *Azalea amæna* (B), *Callicarpa purpurea, Cotoneaster simonsi, Daphne mezereum, Deutzia gracilis, Evonymus radicans* (B), *Kalmia angustifolia* (B), *Robinia hispida, Spiræa bumalda, Spiræa bumalda* Anthony Waterer, *Spiræa japonica, Spiræa tomentosa, Symphoricarpos occidentalis, Symphoricarpos racemosus, Symphoricarpos vulgaris, Viburnum acerifolium.*

Shrubs to 6 Feet. *Azalea nudiflora, Berberis aquifolium* (B), *Berberis thunbergi, Buxus sempervirens suffruticosa* (B), *Callicarpa americana, Calycanthus floridus, Caryopteris mastacanthus, Cephalanthus occidentalis, Clethra alnifolia, Cornus alba, Cornus sanguinea, Cornus stolonifera flaviramea, Cydonia japonica, Deutzia scabra crenata* (Pride of Rochester and others), *Diervilla rosea, Hydrangea arborescens, Hydrangea arborescens sterilis, Hydrangea quercifolia, Juniperus sabina* (C), *Juniperus squamata* (C), *Kerria japonica, Ligustrum ibota regelianum, Lonicera morrowi, Rhodotypos kerrioides, Ribes americanum, Ribes odoratum, Rosa carolina, Rosa rubiginosa, Rosa rugosa, Rosa setigera, Rosa virginiana, Spiræa prunifolia, Spiræa vanhouttei, Spiræa thunbergi, Staphylea bumalda, Stephanandra flexuosa, Tamarix odessana.*

Shrubs to 8 Feet. *Aucuba japonica* (B), *Berberis ilicifolia* (B), *Buddleia davidi, Cephalotaxus pedunculata,* (C), *Elæagnus longipes, Evonymus alatus, Evonymus japonicus* (B), *Forsythia suspensa, Forsythia viridissima, Ilex glabra* (B), *Ilex verticillata, Kalmia latifolia* (B), *Lonicera fragrantissima, Myrica carolinensis, Philadelphus lewisi, Prunus pumila, Viburnum dentatum, Viburnum nudum, Viburnum tomentosum.*

Shrubs to 10 Feet. *Æsculus parviflora, Alnus mitchelliana, Amelanchier alnifolia, Acanthopanax pentaphyllum, Azalea calendulacea, Cephalotaxus drupacea sinensis* (C), *Cercis japonica, Cytisus scoparius, Exochorda grandiflora, Hibiscus syriacus, Hydrangea paniculata, Ligustrum ibota, Ligustrum japonicum, Lonicera ruprechtiana, Lonicera tatarica, Lycium chinensis, Philadelphus coronarius, Philadelphus inodorus, Physocarpus opulifolius, Pinus montana mughus* (C), *Prunus maritima* (C), *Rhamnus cathartica, Staphylea trifolia, Syringa chinensis, Syringa persica, Tamarix gallica, Thuja occidentalis* (dwarf varieties) (C), *Thuja orientalis* (dwarf varieties) (C), *Viburnum opulus.*

Shrubs to 15 Feet. *Amorpha fruticosa, Chionanthus virginica, Colutea arborescens, Cornus florida, Cornus mas, Cornus paniculata, Cratægus oxyacantha, Hamamelis virginiana, Hydrangea paniculata grandiflora, Ligustrum amurense, Magnolia glauca* (H), *Magnolia stellata, Prunus pissardi, Chamæcyparis obtusa* (C), *Chamæcyparis pisifera* (C), *Chamæcyparis pisifera filifera* (C), *Chamæcyparis pisifera plumosa* (C), *Chamæcyparis pisifera squarrosa* (C), *Rhododendron maximum* (B), *Rhus cotinus, Rhus glabra, Salix caprea, Sambucus canadensis, Sambucus pubens, Syringa vulgaris, Viburnum prunifolium.*

Shrubs or Small Trees to 20 Feet. *Amelanchier oblongifolia, Aralia spinosa, Caragana arborescens, Elæagnus angustifolia, Evonymus atropurpureus, Ilex crenata, Ptelea trifoliata.*

Shrubs or Small Trees to 25 Feet. *Amelanchier canadensis, Buxus sempervirens* (B), *Cercis canadensis, Cratægus crusgalli, Juniperus chinensis* (C), *Juniperus communis* (C), *Juniperus excelsa* (C), *Juniperus virginiana* (C), *Styrax japonica, Syringa japonica.*

Large Trees. Red oak, sugar maple, tulip tree, black walnut, sycamore, American elm, mossycup oak, pecan, sweet gum, white oak, pines (C), spruces (C).

PLANTS FOR REGION 26

Shrubs to 2 Feet or Under. *Andromeda polifolia* (B), *Berberis repens* (B), *Calluna vulgaris* (B), *Ceanothus americanus, Chamædaphne calyculata* (B), *Erica carnea* (B), *Erica vagans* (B), *Juniperus communis depressa* (C), *Juniperus prostrata* (C), *Rhus aromatica.*

Shrubs to 4 Feet. *Kalmia angustifolia* (B), *Spiræa bumalda, Spiræa bumalda* Anthony Waterer, *Spiræa japonica, Spiræa tomentosa, Symphoricarpos racemosus, Symphoricarpos vulgaris, Viburnum acerifolium.*

Shrubs to 6 Feet. *Azalea nudiflora, Berberis thun*

bergi, Cephalanthus occidentalis, Clethra alnifolia, Cornus alba, Cornus sanguinea, Cornus stolonifera flaviramea, Cydonia japonica, Hydrangea arborescens, Juniperus squamata (C), *Ligustrum ibota regelianum, Ribes americanum, Ribes odoratum, Rosa carolina, Rosa rugosa, Rosa setigera, Rosa virginiana, Spiræa prunifolia, Spiræa vanhouttei, Staphylea bumalda.*

Shrubs to 8 Feet. *Elæagnus longipes, Forsythia suspensa, Ilex verticillata, Kalmia latifolia* (B), *Myrica carolinensis* (H), *Philadelphus lewisi, Prunus pumila, Viburnum americanum, Viburnum dentatum, Viburnum tomentosum.*

Shrubs to 10 Feet. *Alnus mitchelliana, Amelanchier alnifolia, Azalea calendulacea, Cytisus scoparius, Hibiscus syriacus, Hydrangea paniculata, Ligustrum ibota, Lonicera ruprechtiana, Lonicera tatarica, Lycium chinense, Philadelphus coronarius, Physocarpus opulifolius, Pinus montana mughus* (C), *Prunus maritima* (C), *Rhamnus cathartica, Staphylea trifolia, Syringa chinensis, Thuja occidentalis* (dwarf varieties) (C), *Viburnum opulus.*

Shrubs to 15 Feet. *Cornus florida, Cornus mas, Cornus paniculata, Hamamelis virginiana, Hydrangea paniculata grandiflora, Ligustrum amurense, Prunus pissardi, Rhododendron maximum* (B), *Rhus glabra, Sambucus canadensis, Sambucus pubens, Syringa vulgaris.*

Shrubs or Small Trees to 20 Feet. *Amelanchier oblongifolia, Caragana arborescens, Elæagnus angustifolia, Evonymus atropurpureus, Ptelea trifoliata.*

Shrubs or Small Trees to 25 Feet. *Amelanchier canadensis, Cratægus crusgalli, Juniperus chinensis* (C), *Juniperus communis* (C), *Juniperus virginiana* (C).

Large Trees. American elm, red maple, sugar maple, red oak, white oak, basswood, shagbark hickory, canoe birch, white pine (C), firs (C), spruces (C), hemlock (C).

PLANTS FOR REGION 27

Shrubs to 2 Feet or Under. *Andromeda polifolia* (B), *Berberis repens* (B), *Calluna vulgaris* (B), *Ceanothus americanus, Chamædaphne calyculata, Juniperus communis depressa* (C), *Juniperus prostrata* (C), *Rhus aromatica.*

Shrubs to 4 Feet. *Azalea amœna, Daphne mezereum, Deutzia gracilis, Evonymus radicans* (B), *Kalmia angustifolia* (B), *Spiræa bumalda, Spiræa bumalda* Anthony Waterer, *Spiræa japonica, Spiræa tomentosa, Symphoricarpos occidentalis, Symphoricarpos racemosus, Symphoricarpos vulgaris, Viburnum acerifolium.*

Shrubs to 6 Feet. *Azalea nudiflora Berberis aquifolium* (B), *Berberis thunbergi, Calycanthus floridus, Caryopteris mastacanthus, Cephalanthus occidentalis, Clethra alnifolia, Cornus alba, Cornus sanguinea, Cornus stolonifera flaviramea, Cydonia japonica, Diervilla rosea, Hydrangea arborescens, Hydrangea arborescens sterilis, Juniperus sabina* (C), *Juniperus squamata* (C), *Kerria japonica, Ligustrum ibota regelianum, Lonicera morrowi, Rhodotypos kerrioides, Ribes americanum, Ribes odoratum, Rosa carolina, Rosa rubiginosa, Rosa rugosa, Rosa setigera, Rosa virginiana, Spiræa prunifolia, Spiræa thunbergi, Spiræa vanhouttei, Staphylea bumalda, Stephanandra flexuosa.*

Shrubs to 8 Feet. *Cephalotaxus pedunculata* (C), *Elæagnus longipes, Evonymus alatus, Forsythia suspensa, Forsythia viridissima, Ilex glabra* (B), *Ilex verticillata, Kalmia latifolia* (B), *Myrica carolinensis* (H), *Philadelphus lewisi, Prunus pumila, Viburnum americanum, Viburnum dentatum, Viburnum tomentosum.*

Shrubs to 10 Feet. *Alnus mitchelliana, Amelanchier alnifolia, Azalea calendulacea, Cephalotaxus drupacea sinensis* (C), *Cercis japonica, Cytisus scoparius, Exochorda grandiflora, Hibiscus syriacus, Hydrangea paniculata, Ligustrum ibota, Lonicera ruprechtiana, Lonicera tatarica, Lycium chinense, Philadelphus coronarius, Philadelphus inodorus, Physocarpus opulifolius, Pinus montana mughus* (C), *Prunus maritima, Rhamnus cathartica, Rhododendron catawbiense* (B), *Staphylea trifolia, Syringa chinensis, Syringa persica, Thuja occidentalis* (dwarf varieties) (C), *Thuja orientalis* (dwarf varieties) (C), *Viburnum opulus.*

Shrubs to 15 Feet. *Chamæcyparis obtusa* (C), *Chamæcyparis pisifera* (C), *Chamæcyparis pisifera filifera* (C), *Chamæcyparis pisifera plumosa* (C), *Chamæcyparis pisifera squarrosa* (C), *Chionanthus virginica, Colutea arborescens, Cornus florida, Cornus mas, Cornus paniculata, Cratægus oxyacantha, Hamamelis virginiana, Hydrangea paniculata grandiflora, Ligustrum amurense, Magnolia glauca* (H), *Magnolia stellata, Prunus pissardi, Pyracantha coccinea lalandi* (H), *Rhododendron maximum* (B), *Rhus cotinus, Rhus glabra, Salix caprea, Sambucus canadensis, Sambucus pubens, Syringa vulgaris, Viburnum prunifolium.*

Shrubs or Small Trees to 20 Feet. *Amelanchier oblongifolia, Caragana arborescens, Elæagnus angustifolia, Evonymus atropurpureus, Ptelea trifoliata.*

Shrubs or Small Trees to 25 Feet. *Amelanchier canadensis, Cercis canadensis, Cratægus crusgalli, Juniperus chinensis* (C), *Juniperus communis* (C), *Juniperus excelsa* (C), *Juniperus virginiana* (C), *Styrax japonica, Syringa japonica.*

Large Trees. Red oak, white oak, sugar maple, American elm, tulip tree, basswood, white pine (C), hemlock (C).

PLANTS FOR REGION 28

Shrubs to 2 Feet or Under. *Andromeda polifolia* (B), *Berberis repens* (B), *Calluna vulgaris* (B), *Ceanothus americanus, Cotoneaster buxifolia, Daphne cneorum* (B), *Hypericum moserianum* (B), *Juniperus communis depressa* (C), *Juniperus prostrata* (C), *Rhus aromatica.*

Shrubs to 4 Feet. *Azalea amœna, Callicarpa purpurea, Cotoneaster simonsi, Daphne mezereum, Deutzia gracilis, Evonymus radicans* (B), *Kalmia angustifolia* (B), *Pieris floribunda* (B), *Robinia hispida, Rosa bracteata, Spiræa bumalda, Spiræa bumalda* Anthony Waterer, *Spiræa japonica, Spiræa tomentosa, Symphoricarpos occidentalis, Symphoricarpos racemosus, Symphoricarpos vulgaris, Viburnum acerifolium.*

Shrubs to 6 Feet. *Azalea indica, Azalea nudiflora, Berberis aquifolium* (B), *Berberis thunbergi, Buxus sempervirens suffruticosa* (B), *Callicarpa americana, Calycanthus floridus, Caryopteris mastacanthus, Cephalanthus occidentalis, Clethra alnifolia, Cornus alba, Cornus sanguinea, Cornus stolonifera flaviramea, Cydonia japonica, Deutzia crenata* (Pride of Rochester and others), *Diervilla rosea, Hydrangea arborescens, Hydrangea arborescens sterilis, Hydrangea quercifolia, Jasminum nudiflorum, Juniperus sabina* (C), *Juniperus squamata* (C), *Kerria japonica, Leucothoe catesbæi* (B), *Ligustrum ibota regelianum, Lonicera morrowi, Rhodotypos kerrioides, Ribes odoratum, Rosa carolina, Rosa rubiginosa, Rosa rugosa, Rosa setigera, Rosa virginiana, Spiræa prunifolia, Spiræa thunbergi, Spiræa vanhouttei, Staphylea bumalda, Stephanandra flexuosa, Tamarix odessana.*

Shrubs to 8 Feet. *Abelia grandiflora* (B), *Aucuba*

japonica (B), *Berberis ilicifolia* (B), *Buddleia davidi*, *Cephalotaxus pedunculata* (C), *Elæagnus longipes*, *Elæagnus macrophylla* (B), *Elæagnus pungens* (B), *Escallonia montevidensis* (B), *Evonymus alatus*, *Evonymus japonicus* (B), *Forsythia suspensa*, *Forsythia viridissima*, *Hydrangea hortensis*, *Ilex glabra* (B), *Ilex verticillata*, *Kalmia latifolia* (B), *Lonicera fragrantissima*, *Myrica carolinensis* (H), *Philadelphus lewisi*, *Prunus pumila*, *Viburnum americanum*, *Viburnum dentatum*, *Viburnum nudum*, *Viburnum tomentosum*.

Shrubs to 10 Feet. *Æsculus parviflora*, *Alnus mitchelliana*, *Acanthopanax pentaphyllum*, *Azalea calendulacea*, *Cephalotaxus drupacea sinensis* (C), *Cercis japonica* (C), *Cytisus scoparius*, *Exochorda grandiflora*, *Hibiscus syriacus*, *Hydrangea paniculata*, *Ligustrum ibota*, *Ligustrum japonicum*, *Lonicera ruprechtiana*, *Lonicera tatarica*, *Lycium chinense*, *Philadelphus coronarius*, *Philadelphus inodorus*, *Physocarpus opulifolius*, *Pinus montana mughus* (C), *Prunus maritima*, *Rhamnus cathartica*, *Rhododendron catawbiense* (B), *Rosa lævigata*, *Staphylea trifolia*, *Syringa chinensis*, *Syringa persica*, *Tamarix gallica*, *Thuja occidentalis* (dwarf varieties) (C), *Thuja orientalis* (dwarf varieties) (C), *Viburnum opulus*.

Shrubs to 15 Feet. *Amorpha fruticosa*, *Chionanthus virginica*, *Colutea arborescens*, *Cornus florida*, *Cornus mas*, *Cornus paniculata*, *Hamamelis virginiana*, *Hydrangea paniculata grandiflora*, *Ilex vomitoria* (B), *Ligustrum amurense*, *Magnolia glauca* (B), *Prunus pissardi*, *Pyracantha coccinea lalandi* (H), *Chamæcyparis obtusa* (C), *Chamæcyperis pisifera* (C), *Chamæcyparis pisifera filifera* (C), *Chamæcyparis pisifera plumosa* (C), *Chamæcyparis pisifera squarrosa* (C), *Ligustrum lucidum* (B), *Magnolia stellata*, *Osmanthus aquifolium* (B), *Punica granatum* (B), *Rhododendron maximum* (B), *Rhus cotinus*, *Rhus glabra*, *Salix caprea*, *Sambucus canadensis*, *Sambucus pubens*, *Syringa vulgaris*, *Viburnum prunifolium*.

Shrubs or Small Trees to 20 Feet. *Amelanchier oblongifolia*, *Aralia spinosa*, *Caragana arborescens*, *Elæagnus angustifolia*, *Evonymus atropurpureus*, *Ilex crenata* (B), *Ptelea trifoliata*.

Shrubs or Small Trees to 25 Feet. *Amelanchier canadensis*, *Buxus sempervirens* (B), *Cercis canadensis*, *Cratægus crusgalli*, *Ilex aquifolium* (B), *Juniperus chinensis* (C), *Juniperus communis* (C), *Juniperus excelsa* (C), *Juniperus virginiana* (C), *Ligustrum ovalifolium* (H), *Styrax japonica*.

Large Trees. Red oak, white oak, tulip, willow oak, red maple, Norway maple, sweet gum, pecan, black walnut, sycamore, basswood, sour gum, holly, magnolia laurel oak (B), live oak (B).

PLANTS FOR REGION 29

Shrubs to 2 Feet or Under. *Berberis repens* (B), *Calluna vulgaris* (B), *Ceanothus americanus*, *Cotoneaster buxifolia*, *Cotoneaster microphylla* (B), *Daphne cneorum* (B), *Hypericum moserianum* (B), *Juniperus communis depressa* (C), *Juniperus prostrata* (C), *Rhus aromatica*.

Shrubs to 4 Feet. *Azalea amœna* (B), *Berberis thunbergi*, *Callicarpa purpurea*, *Cotoneaster simonsi*, *Daphne mezereum*, *Deutzia gracilis*, *Evonymus radicans* (B), *Kalmia angustifolia* (B), *Pieris floribunda* (B), *Robinia hispida*, *Rosa bracteata*; *Spiræa bumalda*, *Spiræa bumalda* Anthony Waterer, *Spiræa japonica*, *Spiræa tomentosa*, *Symphoricarpos occidentalis*, *Symphoricarpos racemosus*, *Symphoricarpos vulgaris*, *Viburnum acerifolium*.

Shrubs to 6 Feet. *Azalea indica* (B), *Azalea nudiflora*, *Berberis aquifolium* (B), *Buxus sempervirens suffruticosa* (B), *Callicarpa americana*, *Calycanthus floridus*, *Caryopteris mastacanthus*, *Cephalanthus occidentalis*, *Clethra alnifolia*, *Cornus alba*, *Cornus sanguinea*, *Cornus stolonifera flaviramea*, *Cydonia japonica*, *Deutzia crenata*, *Diervilla rosea*, *Hydrangea arborescens*, *Hydrangea arborescens sterilis*, *Hydrangea quercifolia*, *Jasminum nudiflorum*, *Juniperus sabina* (C), *Juniperus squamata* (C), *Kerria japonica*, *Leucothoe catesbæi* (B), *Ligustrum ibota regelianum*, *Lonicera morrowi*, *Nandina japonica* (B), *Rhodotypos kerrioides*; *Ribes odoratum*, *Rosa carolina*, *Rosa rubiginosa*, *Rosa rugosa*, *Rosa setigera*, *Rosa virginiana*, *Spiræa prunifolia*, *Spiræa thunbergi*, *Spiræa vanhouttei*, *Staphylea bumalda*, *Stephanandra flexuosa*, *Tamarix odessana*.

Shrubs to 8 Feet. *Abelia grandiflora* (B), *Aucuba japonica* (B), *Berberis ilicifolia* (B), *Buddleia davidi*, *Cephalotaxus pedunculata* (C), *Elæagnus longipes*, *Elæagnus macrophylla* (B), *Elæagnus pungens* (B), *Escallonia montevidensis* (B), *Evonymus alatus*, *Evonymus japonicus* (B), *Forsythia suspensa*, *Forsythia viridissima*, *Gardenia jasminoides* (B), *Hydrangea hortensis*, *Ilex glabra* (B), *Ilex verticillata*, *Kalmia latifolia* (B), *Ligustrum sinense*, *Lonicera fragrantissima*, *Myrica carolinensis* (H), *Philadelphus lewisi*, *Viburnum americanum*, *Viburnum dentatum*, *Viburnum nudum*, *Viburnum tomentosum*.

Shrubs to 10 Feet. *Æsculus parviflora*, *Alnus mitchelliana*, *Amelanchier alnifolia*, *Acanthopanax pentaphyllum*, *Azalea calendulacea*, *Cephalotaxus drupacea sinensis* (C), *Cercis japonica*, *Cytisus scoparius*, *Exochorda grandiflora*, *Hibiscus syriacus*, *Hydrangea paniculata*, *Ligustrum ibota*, *Ligustrum japonicum* (B), *Lonicera ruprechtiana*, *Lonicera tatarica*, *Lycium chinense*, *Philadelphus coronarius*, *Philadelphus inodorus*, *Physocarpus opulifolius*, *Pittosporum tobira* (B), *Prunus maritima*, *Rhamnus cathartica*, *Rosa lævigata*, *Staphylea trifolia*, *Syringa chinensis*, *Syringa persica*, *Tamarix gallica*, *Thuja occidentalis* (dwarf varieties) (C), *Thuja orientalis* (dwarf varieties) (C), *Viburnum opulus*.

Shrubs to 15 Feet. *Amorpha fruticosa*, *Chionanthus virginica*, *Colutea arborescens*, *Cornus florida*, *Cornus mas*, *Cornus paniculata*, *Hamamelis virginiana*, *Hydrangea paniculata grandiflora*, *Ilex vomitoria* (B), *Ligustrum amurense*, *Magnolia stellata*, *Magnolia glauca* (B), *Osmanthus fragrans* (B), *Prunus pissardi*, *Pyracantha coccinea lalandi* (H), *Chamæcyparis obtusa* (C), *Chamæcyparis pisifera* (C), *Chamæcyparis pisifera filifera* (C), *Chamæcyparis pisifera plumosa* (C), *Chamæcyparis pisifera squarrosa* (C), *Ligustrum lucidum* (B), *Osmanthus aquifolium* (B), *Photinia serrulata* (B), *Punica granatum* (B), *Rhododendron maximum* (B), *Rhus cotinus*, *Rhus glabra*, *Salix caprea*, *Sambucus canadensis*, *Sambucus pubens*, *Syringa vulgaris*, *Viburnum prunifolium*.

Shrubs or Small Trees to 20 Feet. *Amelanchier oblongifolia*, *Aralia spinosa*, *Camellia japonica* (B), *Caragana arborescens*, *Evonymus atropurpureus*, *Ilex crenata* (B), *Jasminum humile*, *Pieris japonica* (B), *Ptelea trifoliata*, *Thea sinensis* (B).

Shrubs or Small Trees to 25 Feet. *Amelanchier canadensis*, *Buxus sempervirens* (B), *Cercis canadensis*, *Cratægus crusgalli*, *Ilex aquifolium* (B), *Juniperus chinensis* (C), *Juniperus excelsa* (C), *Juniperus virginiana* (C), *Lagerstræmia indica*, *Ligustrum ovalifolium* (H), *Prunus caroliniana* (B), *Styrax japonica*, *Syringa japonica*.

Large Trees. Live oak (B), willow oak, pecan, sweet gum, laurel oak (B), Spanish oak, red oak, tulip tree, American elm, sycamore, evergreen magnolia (B), holly (B), Himalayan cedar (C).

PLANTS FOR REGION 30

Shrubs to 2 Feet or Under. *Cotoneaster buxifolia, Cotoneaster microphylla* (B), *Hypericum moserianum* (B), *Juniperus communis depressa* (C), *Juniperus prostrata* (C), *Rhus aromatica.*

Shrubs to 4 Feet. *Callicarpa purpurea, Cistus ladaniferus* (B), *Cotoneaster simonsi, Deutzia gracilis, Evonymus radicans* (B), *Pieris floribunda* (B), *Robinia hispida, Rosa braceteata, Spiræa bumalda, Spiræa bumalda* Anthony Waterer, *Spiræa japonica, Spiræa tomentosa.*

Shrubs to 6 Feet. *Azalea nudiflora, Berberis thunbergi, Buxus sempervirens suffruticosa* (B), *Callicarpa americana, Calycanthus floridus, Caryopteris mastacanthus, Clethra alnifolia, Cornus sanguinea, Deutzia crenata, Diervilla rosea, Hydrangea arborescens, Hydrangea arborescens sterilis, Hydrangea quercifolia, Jasminum nudiflorum, Juniperus sabina* (C), *Kerria japonica, Ligustrum ibota regelianum, Lonicera morrowi, Nandina japonica* (B), *Rhodotypos kerrioides, Rosa carolina, Rosa rubiginosa, Rosa setigera, Spiræa prunifolia, Spiræa thunbergi, Spiræa vanhouttei, Staphylea bumalda, Stephanandra flexuosa, Tamarix odessana, Viburnum suspensum.*

Shrubs to 8 Feet. *Abelia grandiflora* (B), *Aucuba japonica* (B), *Buddleia davidi, Datura arborea* (H), *Escallonia montevidensis* (B), *Evonymus alatus, Evonymus japonicus* (B), *Forsythia suspensa, Forsythia viridissima, Gardenia jasminoides* (B), *Hydrangea hortensis, Ilex glabra* (B), *Ilex verticillata, Kalmia latifolia* (B), *Ligustrum sinense, Lonicera fragrantissima, Myrica carolinensis* (H), *Philadelphus lewisi, Viburnum nudum, Viburnum tinus* (B).

Shrubs to 10 Feet. *Æsculus parviflora, Amelanchier alnifolia, Acanthopanax pentaphyllum, Azalea calendulacea, Ceanothus thyrsiflorus, Hibiscus syriacus, Hydrangea paniculata, Ligustrum ibota, Ligustrum japonicum* (B), *Lonicera ruprechtiana, Lonicera tatarica, Lycium chinense, Myrtus communis* (B), *Philadelphus coronarius, Philadelphus inodorus, Physocarpus opulifolius, Pittosporum tobira* (B), *Rosa lævigata, Spartium junceum, Staphylea trifolia, Syringa chinensis, Tamarix gallica.*

Shrubs to 15 Feet. *Amorpha fruticosa, Cornis florida, Cornus mas, Hamamelis virginiana, Hydrangea paniculata grandiflora, Ilex vomitoria* (B), *Ligustrum amurense, Ligustrum lucidum* (B), *Magnolia glauca* (B), *Magnolia stellata, Nerium oleander* (B), *Osmanthus aquifolium* (B), *Osmanthus fragrans* (B), *Photinia serrulata* (B), *Punica granatum* (B), *Pyracantha coccinea lalandi* (H), *Salix caprea, Sambucus canadensis, Sambucus pubens, Syringa vulgaris, Viburnum prunifolium.*

Shrubs or Small Trees to 20 Feet. *Amelanchier oblongifolia, Aralia spinosa, Camellia japonica* (B), *Caragana arborescens, Evonymus atropurpureus, Ilex crenata* (B), *Jasminum humile, Pieris japonica* (B), *Ptelea trifoliata, Thea sinensis* (B).

Shrubs or Small Trees to 25 Feet. *Amelanchier canadensis, Buxus sempervirens* (B), *Ilex aquifolium* (B), *Juniperus chinensis* (C), *Juniperus excelsa* (C), *Juniperus virginiana* (C), *Lagerstræmia indica, Ligustrum ovalifolium, Pittosporum undulatum* (B), *Prunus ilicifolia* (B), *Prunus caroliniana* (B), *Styrax japonica, Syringa japonica.*

Large Trees. Live oak (B), willow oak, sweet gum, pecan, red oak, Spanish oak, sycamore, holly (B), magnolia (B), laurel oak (B), palmetto (B), Washington palms (P), Canary Island date palm (P), cypress (C).

PLANTS FOR REGION 31

Shrubs to 2 Feet or Under. *Cotoneaster buxifolia, Cotoneaster microphylla* (B), *Hypericum moserianum* (B).

Shrubs to 4 Feet. *Callicarpa purpurea, Cistus ladaniferus* (B), *Cotoneaster simonsi, Evonymus radicans* (B), *Pieris floribunda* (B), *Spiræa bumalda, Spiræa bumalda* Anthony Waterer, *Spiræa japonica, Spiræa tomentosa.*

Shrubs to 6 Feet. *Buxus sempervirens suffruticosa* (B), *Callicarpa americana, Calycanthus floridus, Clethra alnifolia, Diervilla rosea, Hydrangea arborescens, Hydrangea arborescens sterilis, Jasminum nudiflorum, Nandina japonica* (B), *Spiræa vanhouttei, Viburnum suspensum* (B).

Shrubs to 8 Feet. *Abelia grandiflora* (B), *Aucuba japonica* (B), *Escallonia montevidensis* (B), *Evonymus alatus, Evonymus japonicus, Forsythia suspensa, Forsythia viridissima, Gardenia jasminoides* (B), *Ilex glabra* (B), *Ilex verticillata, Ligustrum sinense, Myrica carolinensis* (H), *Viburnum tinus* (B).

Shrubs to 10 Feet. *Æsculus parviflora, Acanthopanax pentaphyllum, Callistemon lanceolatus, Ceanothus thyrsiflorus, Hydrangea paniculata, Ligustrum japonicum* (B), *Myrtus communis* (B), *Philadelphus coronarius, Philadelphus inodorus, Physocarpus opulifolius, Pittosporum tobira* (B), *Spartium junceum.*

Shrubs to 15 Feet. *Hamamelis virginiana, Hydrangea paniculata grandiflora, Hydrangea quercifolia, Ilex vomitoria* (B), *Ligustrum lucidum* (B), *Magnolia glauca* (B), *Magnolia stellata, Nerium oleander* (B), *Osmanthus aquifolium* (B), *Osmanthus fragrans, Photinia serrulata* (B), *Punica granatum* (B), *Pyracantha coccinea lalandi* (H), *Syringa vulgaris.*

Shrubs or Small Trees to 20 Feet. *Camellia japonica* (B), *Caragana arborescens, Ilex crenata* (B), *Jasminum humile, Melaleuca decussata, Pieris japonica* (B), *Pittosporum phillyræoides* (B), *Thea sinensis* (B).

Shrubs or Small Trees to 25 Feet. *Buxus sempervirens* (B), *Ilex aquifolium* (B), *Ligustrum ovalifolium* (H), *Pittosporum undulatum* (B), *Prunus ilicifolia* (B), *Prunus caroliniana* (B).

Large Trees. Willow oak, beefwood, live oak (B), laurel oak (B), silk oak, magnolia (B), camphor (B), rubber (B), palms of various kinds (P).

PLANTS FOR REGION 32

Shrubs to 4 Feet. *Callicarpa purpurea, Cistus ladaniferus* (B), *Cotoneaster simonsi, Evonymus radicans* (B), *Pieris floribunda* (B).

Shrubs to 6 Feet. *Callicarpa americana, Nandina japonica* (B), *Viburnum suspensum* (B).

Shrubs to 8 Feet. *Aucuba japonica* (B), *Escallonia montevidensis* (B), *Evonymus japonicus* (B), *Gardenia jasminoides* (B), *Ilex glabra* (B).

Shrubs to 10 Feet. *Acanthopanax pentaphyllum, Callistemon lanceolatus, Ligustrum japonicum* (B), *Myrtus communis* (B), *Photinia serrulata* (B), *Pittosporum tobira* (B), *Viburnum tinus* (B).

Shrubs to 15 Feet. *Ilex vomitoria* (B), *Ligustrum lucidum* (B), *Nerium oleander* (B), *Osmanthus fragrans* (B).

Shrubs or Small Trees to 20 Feet. *Ilex crenata* (B), *Jasminum humile, Melaleuca decussata, Pieis japonica* (B), *Pittosporum phillyræoides* (B), *Thea sinensis* (B).

Shrubs or Small Trees to 25 Feet. *Ilex aquifolium*

(B), *Pittosporum undulatum* (B), *Prunus ilicifolia* (B), *Prunus caroliniana* (B).

LARGE TREES. Live oak (B), silk oak, camphor (B), rubber (B), evergreen magnolia (B), beefwood, laurel oak (B), Jacaranda (H), holly (B), Parkinsonia, many palms including the royal palm (P).

GRASSES FOR LAWNS

GENERAL. *Soil.* Lawns require a deep, well-drained, thoroughly enriched, moisture-holding, weed-free soil whose bottom layers are compacted after plowing, but whose surface is finely pulverized for 2 inches.

Fertilizers. Preparatory fertilization should be done with green-manure crops or carefully composted stable manure. Substitutes are ground bone, fish scrap, cotton-seed meal, or similar fertilizers at the rate of 500 to 2,000 pounds per acre.

Propagation. Kentucky blue grass, redtop and white clover are started from seed; carpet grass, St. Augustine grass, mesquite grass, centipede grass and Bahia are propagated from rooted runners; and Bermuda grass and creeping bent may be started in either way. Lawns started in the fall have less competition with weeds during the critical period. Sow the seed three months before freezing weather, or set the roots just before the moist season begins, so that they will become established before winter and the following hot, dry weather.

Cutting. Cut the grass as soon as the lawn mower will take hold. A good lawn will result on a good soil liberally top-dressed, if the grass is cut frequently and regularly and is well supplied with water. Grass clippings should not be removed. Cut often enough to allow the clippings to disappear about the roots in a day or two.

Watering. Make frequent, heavy waterings when necessary. Light daily waterings are bad, though copious daily waterings may be necessary on leachy soils in dry climates.

Lawn problem. Only a few grasses form a close turf suitable for lawns. The lawn problem, therefore, is largely confined to making conditions congenial to lawn grasses, rather than to selecting grasses suited to conditions in different parts of the country, although some selection is also possible. Outstanding characteristics of the grass determine the method of handling.

KENTUCKY BLUE GRASS. Requires plenty of moisture and thrives in cool and even cold weather that is not actually freezing. Hence a clay soil or a soil having a clay subsoil is considered best, although a lighter soil that has a permanent water table 2 to 4 feet below the surface is almost equally good. Lime also is needed, if the soil has any inclination to acidity. As Kentucky blue grass takes two or three years to spread out enough to make a good turf, it should be sown with a grass that will give a quick temporary effect. It does well in moderate shade.

REDTOP. Most successful on gravelly soils. Seems to thrive where Kentucky blue grass fails in regions where climatic conditions are favorable to blue grass. Makes a lawn the first year. For these reasons it is usually sown with Kentucky blue grass. Use either equal parts by weight or 1 part redtop and 3 parts of blue grass, and apply 100 pounds per acre of either mixture.

CREEPING BENT. Most used and best of the many species of bent grasses. Adapted to warmer and drier conditions than Kentucky blue grass, though thriving throughout the blue-grass region. Especially recommended for golf greens. As it spreads rapidly by stolons, the practice of growing selected strains in nursery rows and planting the stolons is being encouraged. These stolons are dug two months or more before freezing weather, chopped into 1 or 2 inch lengths, sown thinly over well-prepared soil, so that pieces will be about 2 inches apart, and covered promptly with a layer of rich, friable soil, then well watered. Seed of a mixture of bent grasses, including creeping bent, may also be used. This mixture is sold as German bent.

RED FESCUE. Probably the most generally satisfactory shade grass, next to Kentucky blue grass, in the cooler regions. Sow at the rate of 50 pounds per acre.

WHITE CLOVER. Often useful as a nurse crop for Kentucky blue grass, making a temporary lawn for a year or two on well-limed or naturally sweet soils. Sow only in spring in the North, or in October on Bermuda-grass lawns in the South, at the rate of 10 pounds per acre.

BERMUDA GRASS. Most generally used lawn grass south of the natural Kentucky blue-grass region, except where special efforts are made to meet blue-grass requirements. Essentially a warm season grass, turning brown with the advent of cool nights even before frost, thriving in hot weather, and standing much drought. Spreads by stolons and becomes a somewhat persistent weed in cultivated ground. May be started in the spring, similarly to the way creeping bent is started, with stolons collected from fields or plants. Set 1 to 2 feet apart each way and keep cultivated for a few weeks. Seed may be sown at the rate of 20 pounds per acre. Since Bermuda-grass lawns are brown in winter it is a common practice to disk them in October, to sow perennial rye grass or white clover, and roll, in order to have a green winter lawn. The Bermuda grass will establish itself the next season.

CARPET GRASS. More attractive than Bermuda grass, adapted only to warmer regions, is less persistent, and grows in shade as well as full sunlight. It is set out in the same way as Bermuda grass.

ST. AUGUSTINE GRASS. Has a broader leaf than carpet grass and is useful on the light lands near the coast south of Charleston, S. C. Planted in the same way as Bermuda grass and carpet grass.

BAHIA. Promising new grass with broad, dark leaves and low habit of growth that is attractive. Established like carpet grass.

CREEPING LIPPIA (LIPPIA CANESCENS). Creeping plant used as a substitute for grass in warm, dry regions. Has a small, grayish foliage and in midsummer small, purplish flowers. Will stand much trampling, grows with little water and requires no cutting except restraining around the edges of the planted area. The plants are set out 1 to 2 feet apart at the beginning of the rainy season.

GRASSES FOR DIFFERENT REGIONS. Grasses suited to the different sections of the country are given by regions as shown by the map.

Region 1. With watering, Kentucky blue grass, redtop, creeping and other bents. For shade, Kentucky blue grass, red fescue. With little or no watering, Bermuda grass and *Lippia canescens.*

Region 2. With occasional watering, Kentucky blue grass, redtop, creeping bent, German bent and native grasses. For shade, Kentucky blue grass and red fescue.

Region 3. With irrigation, Kentucky blue grass, redtop, creeping bent and native grasses like mesquite. For shade, Kentucky blue grass and red fescue. With little watering, Bermuda grass and *Lippia canescens.*

Region 4. With irrigation, mesquite, curly mesquite, and other native grasses, Kentucky blue grass, redtop and creeping bent. For shade, Kentucky blue grass and

red fescue. With little or no irrigation, mesquite with Bermuda grass at the lower altitudes in the West.

Region 5. With copious watering, Kentucky blue grass, redtop, mesquite grass, creeping and other bents. For shade, Kentucky blue grass and red fescue. With less watering, Bermuda grass and with little watering, *Lippia canescens.*

Region 6. With watering, Kentucky blue grass, redtop, creeping and other bents. For shade, Kentucky blue grass and red fescue.

Region 7. With frequent watering, Kentucky blue grass, redtop, creeping and other bents, and mesquite grass. For shade, Kentucky blue grass and red fescue.

Region 8. With much watering, Kentucky blue grass, redtop, creeping bent and other bents. For shade, Kentucky blue grass, red fescue.

Region 9. With copious watering, Kentucky blue grass, creeping bent, redtop, mesquite grass. For shade, Kentucky blue grass, red fescue.

Region 10. With very heavy watering, Kentucky blue grass, redtop, creeping bent. For shade, Kentucky blue grass, red fescue. With less watering, Bermuda grass and *Lippia canescens.*

Region 11. With copious watering, Kentucky blue grass, redtop, creeping bent. For shade, Kentucky blue grass, red fescue.

Region 12. With frequent watering, Kentucky blue grass, redtop, creeping bent. For shade, Kentucky blue grass, red fescue.

Region 13. With frequent watering, Kentucky blue grass, redtop, creeping bent. For shade, Kentucky blue grass, red fescue.

Region 14. With frequent watering, Kentucky blue grass, creeping bent, redtop. For shade, Kentucky blue grass, red fescue.

Region 15. With abundant watering, Kentucky blue grass, redtop, mesquite, creeping bent. For shade, Kentucky blue grass, red fescue.

Region 16. With abundant watering, Kentucky blue grass, redtop, creeping bent. For shade, Kentucky blue grass and red fescue. With somewhat less water, mesquite, Buffalo grass, Bermuda grass.

Region 17. With very copious watering, Kentucky blue grass, creeping bent, redtop. For shade, Kentucky blue grass, red fescue. With somewhat less water, Bermuda grass, centipede grass, St. Augustine grass. For shade, carpet grass.

Region 18. With abundant watering, Kentucky blue grass, redtop, mesquite grass, creeping bent, German bent. For shade, Kentucky blue grass and red fescue.

Region 19. With abundant water, Kentucky blue grass, mesquite grass, creeping bent, redtop. For shade, Kentucky blue grass and red fescue.

Region 20. With abundant water, Kentucky blue grass, mesquite grass, creeping bent, redtop. For shade, Kentucky blue grass, red fescue. With somewhat less water, Bermuda grass, carpet grass and other native grasses. For shade, carpet grass.

Region 21. With water for frequent droughts use Kentucky blue grass, redtop, mesquite and other native grasses and creeping bent. For shade, Kentucky blue grass and red fescue.

Region 22. With water for droughts use Kentucky blue grass, mesquite, creeping bent, redtop. For shade, Kentucky blue grass, red fescue.

Region 23. With water for occasional droughts, Kentucky blue grass, redtop, creeping bent. For shade, Kentucky blue grass, red fescue.

Region 24. Kentucky blue grass, redtop, creeping bent. For shade, Kentucky blue grass, red fescue.

Region 25. Kentucky blue grass, creeping bent, redtop. For shade, Kentucky blue grass, red fescue.

Region 26. Kentucky blue grass, redtop, creeping bent. For shade, Kentucky blue grass, red fescue.

Region 27. Kentucky blue grass, redtop, creeping bent. For shade, Kentucky blue grass, red fescue.

Region 28. Creeping bent, redtop. For shade, Kentucky blue grass, red fescue.

Region 29. Bermuda grass, with perennial rye or white clover added each fall to make a green winter lawn, carpet grass, creeping bent. For shade, Kentucky blue grass, carpet grass, red fescue.

Region 30. Carpet grass, St. Augustine grass, Bermuda grass, with perennial rye or white clover for winter, centipede grass, Bahia, *Lippia canescens* in dry situations. For shade, carpet grass.

Region 31. Carpet grass, St. Augustine grass, Bermuda grass, centipede grass, Bahia, *Lippia canescens* for dry situations. For shade, carpet grass.

Region 32. St. Augustine grass, carpet grass, Bermuda grass, centipede grass, Bahia. For shade, carpet grass.

SECTION III. DISEASES OF PARK TREES AND SHRUBS

DR. HAVEN METCALF

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Trees in forest parks are subject to the same diseases as forest trees. Forest trees have numerous leaf, twig, trunk, and root diseases, varying in severity from leaf spots, which only slow up the rate of growth, to such killing diseases as chestnut blight. The control of some of these diseases, such as white-pine blister rust, is comparatively simple, but for many others there is no practical method of control. Root diseases, which are the cause of a large part of the loss of trees by wind throw, are especially difficult to control. Closely related to root diseases and often caused by the same organisms are diseases that directly produce decay in the tree trunks. This

type of disease plays a major rôle in making wood lots unprofitable, often producing a cull or loss from decay amounting to twenty or thirty per cent of the value of the stand at time of cutting. These decay fungi enter the trunks in various ways — through fire scars, lightning injuries, other wounds, knot holes, old stumps and roots. Fungous organisms sometimes utilize more than one means of entrance. The loss which these fungi produce can often be lessened greatly by the observance of certain general rules of forest sanitation and protection: (1) By preventing forest fires the park manager can eliminate one important mode of entrance for decay fungi — fire scars. (2) By care in any cutting operations he can lessen the number of wounds on the trees left standing. (3) If he cuts trees so that the stumps are low, decay is less likely to spread from the old stumps to the growing sprouts. (4) By removing the diseased trees in all cutting and thinning operations the owner can largely eliminate the source of infection for healthy trees. It is often difficult to detect decay in trees, but hollows at the base of trees or high up in the trunks, open fire scars, fruiting bodies (conks, punks) of decay fungi on the trunk, and hollow sound produced when the tree is struck with an ax, are the surest indications of it. In such trees the decay is usually progressing faster than new wood is forming. Severely wounded, dead and wind-thrown trees should also be removed. Trees which, because of crowding or some other unfavorable factors, are in danger of dying, should be utilized, since decay and other factors rapidly render a dead tree worthless and dangerous. Trees that are making very slow growth, especially those that have many large dead limbs, are usually more susceptible to decay than vigorously growing trees and should be cut in thinning operations. (5) For forest plantings it is often advisable to use a mixture of species, so that if one species is seriously affected by decay or other diseases a full stand can still be obtained. Diseases develop less abundantly in mixed stands than in pure stands.

Trees in planted parks or parks which have been extensively cleared are subject to a number of diseases not shared by forest trees. The clearing away of adjacent trees and undergrowth leaves the surviving trees in unnatural conditions to which some species of trees will not adjust. They usually show their lack of adjustment by becoming stag-headed and slowly dying. Changes in the level of the water table are frequently made in clearing park land, with the result that the surviving trees either suffer from lack of water or the roots are drowned. Many trees are injured by changes in the level of the soil or cutting away of the roots in the process of road building. In parks with extensive lawns which are kept carefully cut, the trees in time suffer from lack of humus and show signs of starvation. This is probably the most frequent cause of dying trees in parks of

the present time. If the lawns are much frequented, the soil about the trees becomes trodden and packed, interfering with both aëration and water supply of the roots. Finally, the trees of city parks, like the trees of city streets, suffer from smoke and fumes. Conifers are usually the first to succumb. There is no remedy for this condition except the planting of trees that are smoke resistant, such as the holly, the ginkgo and the sycamore.

In the average park many trees are hollow as a result of early injuries. It is customary in many places to fill these hollow trees with cement, wood, magnesite, asphalt mixtures and various other substances. While such filling makes a tree look neat and hence may be desirable in trees located in very conspicuous positions, there is little scientific evidence that cavity filling prolongs the life of a tree or materially strengthens it, and as cavity filling is expensive the park manager must decide whether his available funds are not better spent in other processes. A badly decayed tree should be replaced with a new and healthy tree unless there is some very special reason for trying to prolong its life.

SPECIFIC DISEASES

Ash. Rust (*Puccinia fraxinata*). Found in the Eastern and Central States. Irregular swellings on twigs and petioles. Also attacks the leaves. Affected areas covered with yellow pustules. Requires marsh or cord grass as alternate host. Control: Trees should not be grown in or near marshy land.

Catalpa. Leaf spot (*Phyllosticta catalpæ*). Found in Eastern, Southern and Central States. Circular brown spots scattered over leaf surface, slightly depressed, causing wrinkling of leaf. If very numerous, the spots coalesce. Control: Spray trees with Bordeaux (2–2–50) at intervals of about two weeks during the summer. Use Bordeaux (4–4–50) in fall and early spring. Keep soil cultivated about the trees.

Elm. Leaf spot (*Gnomonia ulmea*). Occurs in Eastern and Central States. Gray and black spots on upper surface of leaves. If severely infected, leaves turn brown and fall early. Control: Rake up and burn all fallen leaves. Spray in early spring, before growth begins, with Bordeaux (4–4–50). A second or third application may be necessary before midsummer.

Horse-Chestnut. Leaf blotch (*Guignardia æsculi*). Occurs in the Eastern, Southern and Central States. Reddish brown, irregular blotches on leaflets, surrounded by yellowish zone merging into the green of leaflets. Greater part of leaf surface may be discolored. Leaves begin to fall early—by last of August. Occurs only on buckeye. Control: Spray with Bordeaux (4–4–50). Infected nursery stock should be dusted with mixture of nine parts finely ground sulphur to one part arsenate of lead. Rake up and burn all fallen leaves in autumn.

Maple. Wilt (*Verticillium*). Found in eastern United States. Leaves on individual limbs or parts of tree wilt and die. Fungus grows in sapwood of tree, producing characteristic dark green streaks. Control: Not successful on individual trees. Wilted limbs should be burned and wounds painted. Often best to remove tree immediately to retard infection of surrounding healthy trees.

Anthracnose (*Glœosporium apocryptum*). Occurs in eastern United States. Irregular brown blotches extending from margins of leaves downward along veins. Moist weather favors its spread. Control: Spray trees in early spring with Bordeaux (4–4–50). Two or three applications may be necessary. Rake up and burn all infected leaves.

Leaf spot (*Phyllosticta minima*). Occurs in eastern United States. Light brown circular spots with dark, reddish brown margins. Common on red and white maples. Control: Destroy by burning all fallen leaves.

Tar spot (*Rhytisma acerinum*). Found in Eastern and Central States. First appears as light green or yellowish spots, which become black, resembling tar. Leaves fall early. Affects only white and red maples. Control: Rake up and burn all fallen leaves. Spray with Bordeaux (4–4–50) in early spring before growth begins.

Oak. Anthracnose (*Gnomonia veneta*). Occurs in Eastern and Central States. White oaks particularly susceptible. Brown blotches or spots of irregular shape, particularly along veins of leaves. Moist weather favors spread of disease. Control: Spray trees with Bordeaux (4–4–50) before growth begins in spring at intervals of two weeks. Spray again in fall, and also rake up and burn fallen leaves.

Leaf blister (*Taphrina cœrulescens*). Found throughout the United States. Begins as yellowish spots on

upper leaf surface, which increase in size until leaf tissue bulges out, the convex side usually on upper surface. Curling of leaves may result. Control: Spray with Bordeaux (4–4–50) after leaves fall and before buds swell. Rake up and burn fallen leaves.

Poplar. Canker (*Dothichiza populea*). Occurs in Eastern and Central States. Depressed cankers form on bark of twigs and branches. Small gray-black pustules appear on affected areas. Control: Control is difficult. Disease often can be checked by pruning out all diseased twigs and branches. Protect all cut surfaces by painting. Spray trees when dormant with Bordeaux (4–4–50).

Sycamore. Anthracnose (*Gnomonia veneta*). Symptoms and control same as for oak.

Chestnut. Blight (*Endothia parasitica*). Present in all Eastern States that have extensive chestnut growth. Cankers on limbs and trunk which enlarge until girdle is completed. Leaves on girdled parts turn brown. Control: No control of this disease in native chestnut. Ornamental Japanese and hairy Chinese chestnuts usually can be saved if affected limbs and trunk cankers are removed as soon as noted and all wounds painted.

White Pine. Blister rust (*Cronartium ribicola*). Occurs in the New England States, New Jersey, Pennsylvania, Michigan, Wisconsin, Minnesota, Washington and Oregon. In Canada it occurs in the Provinces of British Columbia, Ontario, Quebec, Prince Edward Island, New Brunswick and Nova Scotia. Disease was introduced into this country from Europe and apparently is of Asiatic origin. On currant and gooseberry bushes, from June to October, the disease appears as an orange-yellow rust on the under side of the leaves. Spores from diseased bushes infect white pines through their needles, and the fungus grows into the bark, producing cankers on the branches and trunk. The cankers are not readily recognized until about three years after infection. They then usually appear as spindle-shaped swellings on the branches or the trunk. The edges of the cankers are marked with a yellowish green or orange discoloration. From April to June blisters about the size of a navy bean burst through the diseased bark. These blisters are full of orange-yellow spores. The blisters break open and the spores infect the leaves of currant and gooseberry plants. The ruptured bark dies after the spores are discharged. The fungus continues to grow into the live bark and each year new blisters are produced until the branch or tree is killed. The bark of old cankers is irregularly cracked, rough and scaly in appearance. Sometimes rodents eat the diseased bark, leaving barkless patches of white wood. These patches turn dark gray in color, and the canker becomes more or less covered with white streaks of dry pitch. Many diseased trees under ten years of age have a stunted, bushy growth and a yellowish color. On older trees the first indication of damage appears as scattered dead and dying branches. The damage becomes more apparent with the continued development of the disease until the tree dies. Control: Blister rust spreads from one currant or gooseberry bush to another, but cannot spread from one pine to another. It can infect pines only through the medium of currants and gooseberries. The rust can be controlled effectively in pine stands by systematic eradication of all species of currant and gooseberry bushes within a short radius of the trees. The exact distance varies with local conditions, but ordinarily a distance of nine hundred feet will be sufficient to protect the pines. Cultivated black currants (*Ribes nigrum*) should be eradicated within a radius of one mile. The black currant is more susceptible to the disease than other species of currants and gooseberries and is an important factor in its spread over long distances and its local establishment. The Department of Agriculture is opposed to its growth in the United States and recommends its elimination from the Pacific, Rocky Mountain, Atlantic, Appalachian, Ohio Valley, upper Mississippi and Lake States.

Ornamental Small Conifers. Blight (*Phomopsis juniperovora*). Occurs in Eastern and Middle Western States and extends throughout the South to the Gulf coast. Fungus blights the tender growth of young stock, producing a canker on the stems of junipers, arborvitæ, cypress, Retinospora, Cryptomeria and Taxus. Control: Spray systematically with Bordeaux (5–5–50), beginning early in season. Add one pound resin fish oil soap to every twenty-five gallons as an adhesive. Destroy badly blighted stock.

Hydrangea. Leaf spot (*Phyllosticta hydrangeæ*). Common. Rusty brown spots on leaves, or blighting of entire tops. Control: Spray with Bordeaux or lime-sulphur.

Lilac. Mildew (*Microsphæra alni*). Common wherever lilac is grown. Whitish, cobwebby growth on surface of leaves, which gives them a dusty appearance. Control: Dust with mixture of nine parts finely ground sulphur and one part arsenate of lead at intervals of about two weeks during the summer. Spray with Bordeaux (4–4–50) when leaves fall in autumn and again in the spring before growth commences.

Rose. Black spot (*Diplocarpon rosæ*). Found wherever rose is grown. Purplish black spots that have irregular ringed margins appear on upper leaf surface. Leaves turn yellow and fall early. Control: Dust with mixture of nine parts finely ground sulphur and one part arsenate of lead at intervals of two weeks during the growing season. Spray with Bordeaux (4–4–50) when plants are dormant. Rake up and burn infected leaves. Grow more resistant varieties and keep plants healthy by cultivation and by winter protection if necessary.

Mildew (*Sphærotheca pannosa*). Occurs wherever rose is grown. Whitish or grayish patches on leaves give them a powdery appearance. Leaves curl, die and fall. Thorns, shoots and even buds may be affected.

Control: Use same method as for black spot.

Boxwood. Leaf blight (*Macrophoma candollei*). Distribution wherever boxwood is grown. Leaves turn yellow and are covered with small black pustules. Defoliation results. Control: Rake up and burn fallen leaves. Spray plants with Bordeaux (4–4–40) in the fall and before growth begins in the spring. A weaker solution (2–2–50) may be used during the growing season.

General Advice

Every park is to a large extent an individual problem and general advice on the care of trees can be given to cover only relatively small sections of the country. It is suggested that park managers facing any new problem of disease control write to the United States Department of Agriculture for specific and expert advice. This will always be given by correspondence, and sometimes personal inspection by experts is provided.

SECTION IV

IMPORTANT INSECTS ATTACKING PARK TREES AND SHRUBS

WILLIAM MIDDLETON
Associate Entomologist, Bureau of Entomology, United States Department of Agriculture

Trees growing under all conditions are subject to insect attack, but the more artificial the conditions of growth the greater the number of insect enemies with serious possibilities. Several conditions closely associated with park buildings are often directly responsible for insect injury to trees. These are: thinning out dense stands, changing grades or earth levels, introducing new and vigorous competitors for the available water and food materials, and finally, planting trees in unsuitable situations or under unfavorable conditions.

Thinning out dense stands has a very decided influence on the available water supply through the elimination of shade and is frequently followed by dying tops and ends of branches and borer attack. The changing of grade levels, filling in hollows, or cutting down hills, also affects the moisture and air conditions of the earth surrounding the roots of the trees present and is followed by much the same tree difficulties as the foregoing. Competition is the usual forest struggle and plays an important and an often valuable rôle, but it is possible, through injudicious planting, to injure considerably very desirable trees.

With regard to planting, we believe that the tree and site should both be selected. Never choose too many of one kind of tree and always select locations for trees that meet the needs of the trees. Too many of one kind of tree intensifies the park problem of the enemies of that species and gives these insect enemies optimum conditions for multiplication (abundant food material). Different trees vary somewhat in their requirements for soil, depth of soil and moisture, and an oversight of these essentials is very apt

to lead not only to a weakened tree or group of trees and to insect attack, but not infrequently to confusion in diagnosing the cause of the trouble and loss of money in attempts at remedying the situation.

There are several different types of insects that are injurious to park trees, among which are bark beetles, borers, aphids, scale insects and defoliators.

Bark Beetles

Pine, Spruce and Fir Bark Beetles (*Dendroctonus and Ips*). Throughout the United States immense numbers of coniferous trees are killed annually by bark beetles. The insects themselves are small, black to brown, cylindrical beetles, and their destructive work consists of mines or galleries between the bark and the wood that girdle the trees and kill them. The young grubs or larvæ of the bark beetles live and grow on the inner bark. Evidence of attack consists of (1) fading foliage, (2) pitch tubes or resin tubes on the trunk of the tree, and (3) reddish boring dust on the bark and at the base of the tree. The newly grown adult beetles emerge from infested trees and fly to attack others. Evidence of their eaving is found in great numbers of "shot holes" in the bark of the trunk and limbs.

Plate No. 255
THE MOUNTAIN PINE BEETLE
Photograph by United States Bureau of Entomology.

The Hickory Bark Beetle (*Scolytus quadrispinosus*). Hickories are frequently infested and killed by the hickory bark beetle. This insect is a small dark brown to blackish beetle about the size of a rice grain. Its work is similar in general to that of the foregoing species.

The Two-Lined Chestnut and Oak Borer, and the Bronze Birch Borer (*Agrilus spp.*). Chestnut, oak, birch and other trees are often attacked and sometimes killed by flatheaded bark borers. Flat winding mines between the bark and the wood of the trees are the principal positive evidence of attack.

Control. Bark beetle control is a complex problem and a number of factors enter into it.

1. Many bark beetles prefer weakened trees, so that the maintenance or restoration of vigor is frequently of prime importance. Proper pruning, thinning, transplanting, care of wounds, fertilizing, maintaining water supply and protection of ground conditions should be carefully planned for

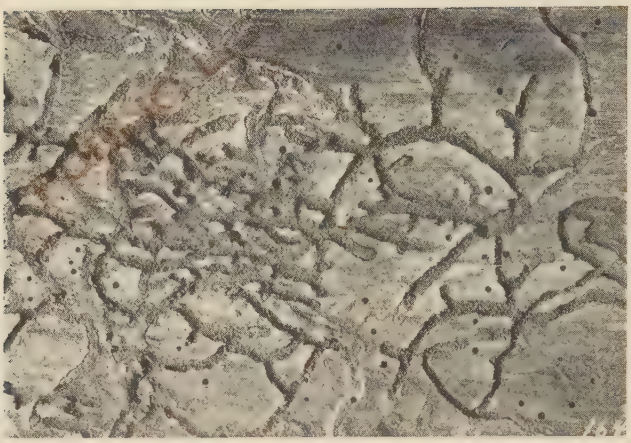

Plate No. 256
GALLERIES OF THE WESTERN PINE BEETLE
(*DENDROCTONUS BREVICOMIS*)
Photograph by United States Bureau of Entomology.

in the management of the park. Too sudden changes, even for the ultimate betterment of conditions, are often devitalizing to trees.

2. Dead, badly infested and hopelessly weakened trees should be removed promptly and destroyed. Often, and particularly in the case of coniferous trees, such trees serve not only as breeding places for injurious species, but attract and tend to localize in damaging numbers primary and secondary insect enemies. In the case of conifers the trees to be destroyed should be removed and burned, including the stump, with the greatest possible rapidity.

Borers

Most of the wood-boring insects are secondary in the nature of their attack, infesting weakened trees or those that have been injured and the wounds of which have not been treated. The borers of elm, maple, linden, etc., are of this group, and measures tending to promote healthy, vigorous growth and the protection of wounds will eliminate much of this type of injury.

Some borers are primary, however, such as the locust borer, the white pine weevil and the shoot moths. Over these some advantage may be secured by dense and mixed plantings during the early years of the tree's development. Shade and dense growth are undoubtedly strong protective features under such conditions.

Treatment consists of the removal and destruction of the infested material, and occasionally in the killing of the borers by running flexible wires into their burrows or by injecting a little carbon disulphid into the gallery openings with an oil can and then tightly plugging all the holes for several days with grafting wax, putty, or some gas-proof material. The wounds should then be opened, cleaned and painted. Carbon disulphid is inflammable and poisonous and should be handled with care.

PLATE No. 257. GALLERIES OF THE HICKORY BARK BEETLE IN BARK AND WOOD
Photograph by United States Bureau of Entomology.

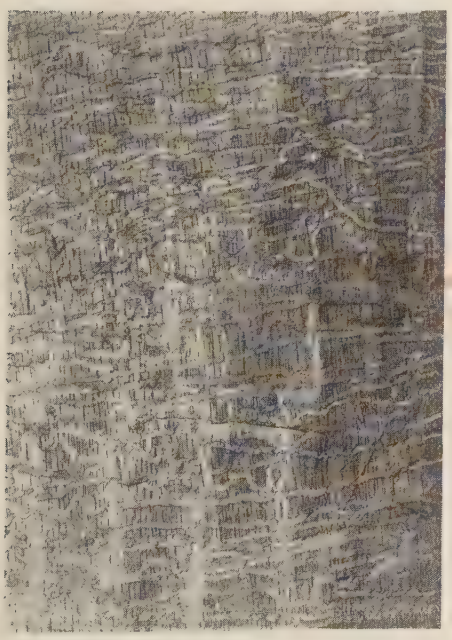

PLATE No. 258. MINES OF THE TWO-LINED CHESTNUT AND OAK BORER (*AGRILUS BILINEATUS*) ON OAK WOOD
Photograph by United States Bureau of Entomology.

PLATE No. 259. GALLERIES AND GRUB OF THE ELM BORER (*SAPERDA*)
Photograph by United States Bureau of Entomology.

Aphids

Some years, and very often in the spring, aphids or plant lice are abundant on trees. These are sucking insects, small, soft bodied, somewhat pear-shaped and colored from pale yellow or green to pink or blackish. They are usually found on the undersides of leaves or on the tender new growth. Maple, beech, birch, linden and tulip poplar are among the most frequently infested trees. The feeding of the aphids is usually not a serious menace to the life of the trees attacked. They may, however, cause paling and early falling of the foliage. Sometimes they are very annoying because of their honeydew — the sweet liquid they excrete — which falls, wetting the upper surfaces of the leaves and the ground beneath the tree and soiling everything with which it comes in contact. Aphids are usually naturally controlled by weather conditions and various insects that feed on them, such as the ladybird beetles, but sometimes it is advisable to combat them artificially. For this purpose a spray composed of the following is very effective: Nicotine sulphate, 1 pint; soap, 12 pounds; water, 100 gallons. This spray should be applied at least twice, with an interval of one week or ten days between treatments. It should be applied in such a way that the material will come in contact with the bodies of the lice; it usually works best on warm, bright days.

Plate No. 260
THE WOOLLY MAPLE AND ALDER BLIGHT APHID ON MAPLE LEAVES
Photograph by United States Bureau of Entomology.

Scale Insects

Under park and shade tree conditions scale insects are of great importance. These insects weaken and kill trees, limbs and branches. The pine leaf scale found on pine and spruce needles and the juniper scale are important scale enemies of ornamental conifers. The San Jose scale, the oyster shell scale, the gloomy scale, the cottony maple scale, the obscure scale, the golden or pit-making oak scale, the tulip tree soft scale and many others are all important enemies of the various hardwood trees.

The presence of scale on hardwood or deciduous trees is best deter-

mined by the examination of the smooth bark of branches from various parts of the trees. The scales are usually recognizable as small to large bodies, hard shelled or soft, which adhere close to the bark but which may be readily crushed or scraped off. The scales on conifers are usually whitish or gray in color and occur on the leaves.

PLATE No. 261
APHIDS AND HONEYDEW ON TULIP-POPLAR LEAVES
Photograph by Uuited States Bureau of Entomology.

In combating scale insects, the removal and destruction of dead and heavily infested material that can be spared is advised. Fertilization and an adequate supply of water are of great help, and spraying, where practicable, is very valuable. Dormant spraying in the early spring, before new growth starts, with miscible oils or oil emulsions, is usually quite effective. The oils should be used according to the manufacturers' directions. The spraying apparatus should be carefully cleaned, and in the application care should be taken to cover the tree well but not to allow the oil to accumulate in puddles about the base of the tree.

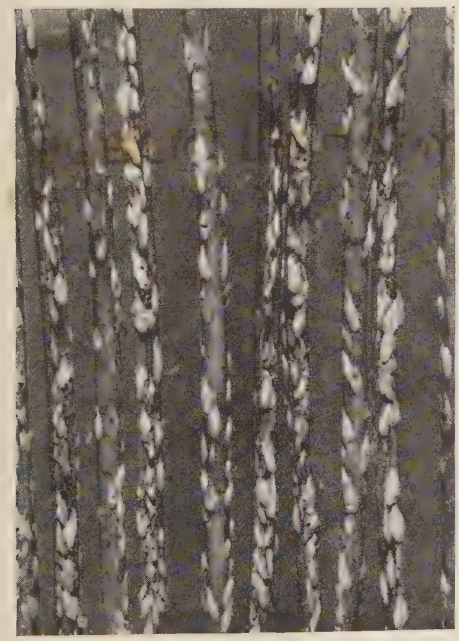

PLATE No. 262. THE PINE LEAF SCALE
Photograph by United States Bureau of Entomology.

DEFOLIATORS

The most common type of insect injury to trees is that of foliage eating. In the case of deciduous trees defoliation is not a very serious injury unless it occurs year after year and is complete. Furthermore, late summer or fall defoliation of hardwoods is seldom followed by severe effects, as can be observed in the case of the locust, which is often to be recognized year after year by its brown leaves in late summer due to the work of the locust leaf miner. With evergreens, however, defolia-

PLATE No. 263
THE OYSTER SHELL SCALE
Photograph by United States Bureau of Entomology.

PLATE No. 264
THE COTTONY MAPLE SCALE
Photograph by United States Bureau of Entomology.

PLATE No. 265
THE TULIP TREE SOFT SCALE
Photograph by United States Bureau of Entomology.

PLATE No. 266
BAGWORMS ON ARBORVITÆ
Photograph by United States Bureau of Entomology.

tion occupies a more important role; single complete defoliations can kill outright trees of this nature.

Control. Leaf eating caterpillars, sawfly larvæ or beetles can be combated by spraying with a lead arsenate and water mixture, using one pound of powdered lead arsenate to fifty gallons of water.

Certain species of defoliating insects are more often met with and are far more abundant and more injurious than others. The habits of these species vary as to host plant, time of appearance and manner of work, and, since these are important items in prevention of attack and control, a few of the principal defoliators will be treated here briefly.

The Bagworm. The bagworm is a caterpillar that lives in a sack or bag of silk, ornamented with portions of the plant fed upon. The body is soft except for the head and thoracic plates, and is dull brownish to blackish in color. The bagworm feeds on a wide variety of plants, both deciduous and evergreen, but apparently prefers arborvitæ and juniper.

Control may be effective by spraying, as soon as the bagworms are observed, with lead arsenate, using one to two pounds of lead arsenate to fifty gallons of water. Picking and destroying bags during the fall, winter and early spring, when they contain the eggs for the next year's generation, is also an excellent means of preventing attack.

The Elm Leaf Beetle. Elms are very subject to defoliation by the elm leaf beetle, and when the trees are denuded year after year death follows. The elm leaf

Plate No. 267. THE ELM LEAF BEETLE

a, Elm leaves showing adults, larvæ, and feeding work of the beetle; *b*, adult beetle; *c*, eggs; *d*, young larvæ; *e*, full-grown larva; *f*, mouth parts of full-grown larva; *g*, pupa. Drawings by United States Bureau of Entomology.

beetle is a small greenish to yellowish beetle with black stripes down the sides of the wing covers. The beetles pass the winter living in sheltered places and begin to feed on the new elm leaves in the spring. When the leaves are fairly well grown the female beetles begin to lay eggs. The larvæ or grubs hatching from these eggs also feed on the elm leaves, transforming into beetles in early July. A second generation follows.

Control is best accomplished by spraying the trees with a lead arsenate and water mixture, one pound of powdered lead arsenate to fifty gallons

PLATE No. 268. THE WHITE MARKED TUSSOCK MOTH

a, Caterpillar; *b*, pupa of female; *c*, pupa of male; *d* and *e*, male moths; *f* and *g*, female moths (note absence of well-developed wings); *h*, egg mass; *i*, cocoon of male; *k*, cocoon of female, with moth and egg mass on outside. Drawings by United States Bureau of Entomology.

of water. This should be done just after the buds burst and again two weeks later. Rainfall soon after spraying may make necessary a third and a fourth application.

The White Marked Tussock Moth. The caterpillar of the white marked tussock moth is one of the worst defoliators of deciduous park and shade trees. The caterpillar, when full grown, is more than one inch long, with a red head, two long black plumes back of the head and one long black plume at the rear, four yellow brush-like tufts in a row on the back behind the front pair of plumes and two red spots between the tufts and the last black plume. The caterpillars hatch from the overwintering eggs in April and May and immediately begin feeding on the leaves. When full grown they seek a more or less sheltered place to spin their grayish cocoons of silk and hair, from which the adults shortly issue. The male is a grayish winged moth that flies, the female is short, stout and white, has very small wings and is unable to fly. She crawls to the outside of her cocoon or nearby and after fertilization lays her eggs in a white, froth covered mass and then dies. Two or three generations of this species are usually produced annually.

The species may be controlled by spraying infested foliage with lead arsenate, one pound of powdered lead arsenate to fifty gallons of water, and by destroying egg masses and cocoons.

Spraying machinery suitable for performing the various necessary tasks in insect control is on the market. Many types are available, each designed to meet a special need for service and for cost of equipment. In the management of extensive parks, motor driven spraying apparatus is desirable. These machines should be equipped with large tanks for the insecticide and powerful engines and pumps. Large tanks require less frequent filling and therefore more trees can be treated in a given time. Powerful engines and pumps assure maintenance of high pressure, thus ensuring the covering of tall, heavy-foliaged trees. For the smaller parks, barrel or wheelbarrow machines with long rods and hose, platforms and ladders, will often be found very serviceable, and the initial cost of such apparatus is much less than that of power outfits.

CHAPTER XIII

THE RECREATION SERVICE DIVISION

Inasmuch as all the different types of properties comprised in a park system are intended for the recreation of the people, it follows that the public department charged with the development, government and administration of these properties is functionally a recreation department. To speak of a "recreation division or department" within a park department is therefore somewhat anomalous and must be taken in a more or less restricted, technical sense as applying to certain kinds of recreative service in which the idea of organization and leadership predominates.

The recreation services of a park department are general and special, unorganized and organized. To the first class of services belong the use of parks by the people in ways that require no organization or supervision other than compliance with certain rules and regulations obeyed willingly by the people themselves or enforced by guards or caretakers. People may come to the parks because of their desire to secure fresh air, bask in the sunshine, enjoy the beauties of nature, to rest and relax, to walk, drive or ride about, to visit with friends, and to picnic. Unless there is too much interference from guards and caretakers parks are also the paradise of lovers. Children may enjoy full play, and the students of nature follow unhindered their particular hobbies. The varied use of parks and park facilities by organized groups under their own leadership, although acting under a permit system of the department, may perhaps be included under this type of service.

While there are no available records of the volume of this type of recreational service of park departments, it is perhaps a fact that its total volume is far greater than the volume of service rendered under a system of definitely organized and supervised use. It is true, of course, that this form of unorganized and unsupervised service may be greatly increased by systematic educational publicity through the organized service division of the department. (See Chapter XIX, "Educational Publicity.")

To the second class of service belongs the use of parks and especially facilities therein where more or less definite organization of activities and supervision of activities and facilities are required. This type of service has greatly increased during the past twenty-five years and is constantly expanding. As thought of here, it is more comprehensive than the general conception of a recreation division in a park department, including not only children's playgrounds, athletic fields and games, courts and grounds,

swimming and boating centers, winter sports places, outdoor and indoor theatres, dance platforms or halls, gymnasiums, community centers, picnic places, golf courses, camps, etc., and all the varied activities connected therewith, but also the zoo, aquarium, botanical garden, conservatory, branch library, museum, art gallery and refectory. All these varied types of organized services require specially trained leaders and assistants and a more or less definite organization and supervision of the activities.

In no park department are all these services requiring organization and supervision grouped into a single division or department. The zoo and aquarium, the botanical garden and conservatory, the art gallery, the museum, the refectory are almost invariably in the larger systems conducted as independent divisions, and most of them may be wholly independent of the park governing authority. (See Chapters on "Zoölogical Gardens and Aquariums" for a detailed presentation of their organization and management.) In some instances golf, band concerts and numerous dramatic activities are organized and conducted as independent of the regularly organized recreation division.

The Recreation Program.

As commonly understood, a recreation division or department of a park department may include under its supervision and jurisdiction such facilities as children's playgrounds, athletic fields and other games and sports places, swimming and boating centers, winter sports centers, dance platforms, outdoor and indoor theatres, including moving pictures, gymnasiums, community or recreation centers, golf courses and camps.

PLATE NO. 269. PLAY DAY IN ONE OF WESTCHESTER COUNTY'S PARKS

The desires of children, young people and adults for recreation do not find expression through the same channels. Some people find their greatest satisfaction in physical activities; others in social activities. With a large number the appeal is along artistic lines, in the enjoyment of painting and other forms of art and in creating something. For this reason the recreation program must be exceedingly broad in its scope, providing for diversity of tastes and desires as well as for varied age groups.

West Chicago Park Commissioners Playground Department Yearly Program of Activities for Directors Revised 1927

Promoted through Central Office Required of All Parks	*Promoted by Local Staff Required of All Parks*	*Promoted by Local Staff Optional with Parks*
January		
Inter-park ice skating meet.	Inter-park skating meet.	Toboggan races.
Inter-park basket ball tournament.	Inter-park ice carnival.	Ski races.
Inter-park checker tournament.	Inter-park checker tournament.	Snow modeling.
City-wide checker tournament.	Inter-park indoor baseball tournament.	Sled races.
Winter sports ice carnival.	Weekly social dancing.	Dog and sled derby.
Motion picture entertainments.	Miscellaneous assembly programs.	Americanization programs.
First aid lectures and demonstrations.		Community night.
Music class instruction.		Dramatic entertainments.
Circulation of library books (throughout year).		Grammar school athletic leagues.
		Boy Scouts and Camp Fire Girls (throughout year).
		Handball tournament.
February		
Competition in city-wide ice skating meet.	Inter-park wrestling tournament.	Continuation of winter sports program.
Inter-park basket ball tournament.	Inter-park volley ball tournament.	Grammar school athletic leagues.
City-wide basket ball tournaments.	Gymnastic exhibitions.	Stunt night for gymnasium classes.
Inter-park indoor baseball tournament.	Lincoln Day and Washington Day program.	Weekly folk dance socials.
Inter-park girls' volley ball tournament.	Weekly social dance.	Community nights.
Motion picture entertainments.	Miscellaneous assembly programs.	Business men's volley ball league.
First aid lectures and demonstrations.	Concerts and operettas.	Exhibit of children's handiwork.
Instructions in music to groups.		Ping-pong tournament.
Preparation of groups for gymnastic demonstration.		Minstrel show.
		Valentine parties.
March		
Inter-park girls' volley ball tournament.	Dramatic entertainments.	Grammar school basket ball league.
Inter-park boys' volley ball tournament.	Gymnastic demonstrations.	Ping-pong tournament.
City-wide basket ball tournaments.	Weekly social dance.	Community sing fests.
Inter-park wrestling tournament.	Miscellaneous assembly programs.	Community socials.
City-wide wrestling tournaments.	Inter-park athletic tournaments.	Forum.
Dramatic week presentations by junior and senior dramatic clubs.		Athletic carnival.
Annual gymnastic demonstration.		Business men's volley ball league.
Motion picture entertainments.		Hot stove quartet.
First aid lectures and demonstrations.		Domestic science demonstrations.
Preparation of groups for annual music festival.		Father and Son Day.
		Organize nature study club.
April		
Inter-park roller skating meet.	Concerts and operettas.	Grammar school volley ball tournament.
Preparation of groups for annual music festival.	Weekly social dance.	Kiddies' marble tournament.
Preparation of groups for annual play festival.	Revue of indoor season activities.	Plays and games night.
First aid lectures and demonstrations.	Handcraft exhibit.	Harmonica recital.
Competition in A. A. F. volley ball.	Inter-park roller skating meet.	Hobby show.
Competition in inter-park boys' volley ball tournament.	Preparation for boys' week exposition.	Roller skating hockey.
	Miscellaneous assembly programs.	Orchestral programs.
	Easter Day programs.	Homemade radio exhibit.
		Bird house exhibit.
		Mother and Daughter Day.
May		
Annual arts and crafts exhibit.	Inter-park marble tournament.	Community gardening contest.
Inter-park marble tournament.	Annual clean-up week.	May Day celebration.
City-wide marble tournament.	Play festival rehearsal.	Community hikes.
Inter-park bicycling meet.	Music festival rehearsal.	Tops contest.
Preparation of groups for annual music festival.	Participation in Boys' Achievement Exposition.	Pushmobile races.
Preparation of groups for annual play festival.	Miscellaneous assembly programs.	Mock athletic meet.
City-wide roller skating meet.	Junior police drill.	Grammar school playground ball league.
Participation in Boys' Achievement Exposition (Boys' Week).	Girl cadet drill.	Paper flower show.
	Bicycling meet preliminaries.	Kiddie kar races.
		Memorial Day programs.
June		
Inter-park playground baseball tournament for boys.	Inter-park playground ball tournament for boys.	Scooter races.
Annual junior and senior music festival.	Inter-park girls' long ball and playground ball tournaments.	Kite flying contest.
Annual play festival.	Inter-park ball players' contest.	Pet show and circus.
Inter-park top tournament for boys.	Inter-park top tournaments.	Baby show and parade.
Inter-park rope jumping tournament for girls.	Inter-park rope jumping tournament.	Grammar school playground ball league.
		Community gardening contest.
		Quoits tournament.

Promoted through Central Office Required of All Parks	*Promoted by Local Staff Required of All Parks*	*Promoted by Local Staff Optional with Parks*
Grammar school track and field meet.	Construction of sail and motor boats.	Model aeroplane races.
City-wide ball players' contest.	Community play festival.	Flag Day celebration.
	Junior police drill.	Hoop races.
	Girl cadet drill.	Instruction in campcraft.
	JULY	
Inter-park track and field meet for intermediate boys.	Inter-park track and field meets (boys and men).	Lantern parade.
Inter-park track and field meet for junior boys and senior men.	Inter-park swimming meet.	Quoits tournament.
Inter-park playground baseball tournament boys.	Inter-park ball tournaments.	Pantomime plays.
Inter-park playground baseball tournament, senior girls.	Inter-park hopscotch tournament.	Mumble-the-peg tournaments.
Inter-park long ball tournament, junior girls.	Inter-park bean bag tournament.	Doll show.
Athletic efficiency tests.	Inter-park diabolo tournament.	Sand and clay modeling.
Outdoor lectures and movies, in coöperation with Y. M. C. A.	Independence Day programs.	Whittling contest.
Inter-park model boat race tournament.	Twilight athletic leagues.	Fancy roping contest.
Inter-park hopscotch tournament.	Junior police drill.	Wading pool carnival.
Inter-park bean bags and diabolo tournaments.	Girl cadet drill.	Outdoor community programs.
Instruction in fancy roping, in coöperation with Chicago Association Commerce.	Sand and clay modeling, hand construction work, plays and games, tots.	Juvenile band concerts.
City-wide playground baseball tournament.	Hikes.	Life saving instruction.
	Weekly story hour, in coöperation with Chicago Public Library.	
	Inter-park athletic efficiency tests.	
	Knot-Hole Club, attendance at National and American League baseball games.	
	AUGUST	
Inter-park swimming meet.	Inter-park water carnivals.	Doll buggy parade.
Inter-park tennis meet.	Inter-park ball tournaments.	Mumble-the-peg tournament.
Inter-park horseshoe pitching meet.	Inter-park twilight leagues.	Sand and clay modeling.
Inter-park track and field meet, girls.	Inter-park tennis tournament.	Mardi gras.
Inter-park O'Leary tournament.	Inter-park horseshoes tournament.	Whittling contest.
Inter-park peg tournament.	Inter-park O'Leary tournament.	Fancy roping contest.
Inter-park field day and picnic.	Inter-park peg tournament.	Palines tournament.
Inter-park jackstones tournament.	Inter-park field day preliminaries.	Croquet tournament.
Competition in fancy roping at rodeo.	Inter-park jackstones tournament.	Wild West show.
Athletic efficiency tests.	Inter-park track and field meet, girls.	Outdoor community programs.
Outdoor lectures and movies, in coöperation with Y. M. C. A.	Junior police and girl cadet drill.	Juvenile band concerts.
City-wide track and field meets for boys and men.	Sand and clay modeling, hand construction work, plays and games for tots.	Instruction in life saving.
City-wide swimming meets.	Hikes.	Junior Olympic meet.
	Weekly story hour in coöperation with Chicago Public Library.	
	Inter-park athletic efficiency tests.	
	Knot-Hole Club, attendance at National and American League baseball games.	
	SEPTEMBER	
Annual vacations of staff members.	Twilight athletic leagues.	Doll dress exhibit.
City-wide track and field meets for girls.	Junior police and girl cadet drills.	Outdoor community programs.
Registration for gymnasium classes.	Inter-park ball tournaments.	Community hikes.
	Inter-park soccer tournament.	Whistling contest.
	Gymnasium class registration.	Home garden products exposition.
	Hikes.	Community pageants and festivals.
	OCTOBER	
Inter-park soccer tournament for intermediate boys and senior men.	Inter-park soccer tournament.	Costume parade and dance.
Registration for and organization of gymnasium classes.	Gymnasium class instruction.	Story telling contests.
Preparation of groups for Hallowe'en celebrations.	Hallowe'en parties for gymnasium classes.	Wagon or coaster races.
		Stilt walking races.
		Grammar school athletic tournaments.
		Organize Health Club .
		Columbus Day program.
		Touch football.
	NOVEMBER	
Preparation of groups for Thanksgiving and Christmas celebrations.	Thanksgiving Day parties for gymnasium classes.	Amateur nights.
Gymnasium and recreation class instruction.	Armistice Day programs.	Collections exhibit.
Social dancing, informals and instruction in.	Concerts and operettas.	Ukulele and banjo recitals.
Organization of classes for music instruction.	Weekly social dance.	Tumbling and pyramids show.
	Miscellaneous assembly programs.	Sewing circle socials.
	Inter-park athletic tournaments.	Organize reading club.
		Poster and photography exhibit.
		Armistice Day programs.
	DECEMBER	
Gymnasium and recreation class instruction.	Inter-park basketball tournament.	Debates.
Organization of athletic teams.	Inter-park athletic tournaments.	Toy Town exhibit.
Preparation of groups for Christmas celebrations.	Weekly social dance.	Novelty boxing and wrestling show.
Social dancing, informals and instruction in.	Holiday celebrations and entertainments.	Quilting parties.
Music class instruction.	Miscellaneous assembly programs.	Music memory contests.
	Ice skating preliminaries.	Handball tournament.

This program from the West Chicago Park Commissioners shows how broad the recreation program may be. Into it are woven the varied interests of children and adults in their leisure time. There are the physical

activities — the athletic games and sports; the musical, dramatic and social interests. The constructive impulse — the desire to create — is given full scope through the handcraft program. The environmental and scientific interest which finds expression in a growing knowledge of nature is given its opportunity, and linguistic interests represented in story-telling, public discussions and similar activities are a part of the program.

PLATE NO. 270
SAILBOATS CONSTRUCTED BY DETROIT BOYS

CHILDREN'S PLAYGROUNDS

The program of the children's playground represents a composite of all the essential elements entering into the community recreation program outlined, with adaptations to the particular needs of children. Activities range from team games of low organization to the more specialized forms of athletic tournaments and include small children's activities, ring games, singing games and similar events for which the leadership of a skilled kindergarten teacher is well qualified; story-telling, handcraft, dramatics, music and similar activities.

The minimum staff for caring for any standard size playground should be one man and one woman, although on a very small playground one person, preferably a well-trained woman, should be able to cope with the situation. A woman is better than a man in directing the activities of little children, and in many instances she will be equally successful with the activities of the boy from ten to twelve years of age. It is always desirable for workers to be employed on a year-round basis whenever this is possible. Only in this way can fully competent workers be secured, all the benefits of play centers assured and continuity of interest and growth brought about. Sometimes, in connection

PLATE NO. 271
A STILT CONTEST IN EVANSTON, ILLINOIS

with park recreation programs, there are field houses or community buildings where it is necessary to have gymnasium instructors, athletic directors, handcraft workers and similar leaders. The time of these workers should be so distributed that their services may be used on the playgrounds and at the field houses in a way which will meet the needs of various groups.

General Suggestions for the Conduct of Playgrounds.

While rules for the conduct of playgrounds and play centers vary somewhat in different cities there are certain principles which are common to all. A few of these follow:

Opening the playground. Be at the playground fifteen minutes before the opening so that everything will be in readiness. Open on time all gates and doors to the toilets and dressing rooms. Check out supplies, making sure the proper individual is charged with an article taken out. Hoist the flag on all playgrounds where there are flagpoles.

Call in all supplies at least fifteen minutes before closing time and check them up. Lower flag and put away. Shut off hydrants and gas and electric switches, close windows and gates. Be the last one off the ground.

Care of supplies. Urge the children to exert special care in the use of all material, and allow no good material to be used out-of-doors on rainy days. Take proper care of balls and repair them. Repair work which cannot be handled on the playgrounds should be sent to the repair shop.

Safety precautions. Proper care of playground apparatus is important not only from the standpoint of safety of the children, but of the personal liability of the workers and the city. Breaks in surfacing should be repaired and holes filled in. All apparatus should be inspected and children instructed in its use. Swings should be fenced, danger zones for various games marked, the sand box left clean, pits beneath gymnasium frames filled with shavings, and sawdust provided to cover sides of jumping pits.

Health protection. Every possible measure from the standpoint of health should be enforced with due regard to laws of sanitation and accident prevention. Playgrounds should be sprinkled to prevent dust, lavatories kept clean, sanitary drinking fountains provided, facilities for washing hands furnished and children who are ill excluded from the ground.

Discipline. If it is necessary to punish a child, find out the facts first. Too many warnings are not good policy. Say what you mean and mean what you say, but avoid gaining the ill will of the child. If a child is suspended for a day, he should apply at the office of the superintendent for permission to return.

No smoking, improper conduct or use of improper language should be permitted. There must be no rough usage of property.

Use of school buildings and small playgrounds. Permission should be obtained for use of school buildings during playground hours and application should state hours and purpose for which use is desired. If the playground is not large enough to take care of the activities of children above elementary school age, little children should have preference, others being excluded.

Ground rules. Every ground should have special rules adapted to its own use. If it is a very small ground there will probably have to be an age limit for the children and other rules relative to their safety. There may be certain regulations for the protection of neighbors. All these should be posted and carefully enforced.

Treatment of visitors. Make it a point to act in a courteous manner to all visitors and take pleasure in showing them around the ground if it is at a time when it doesn't interfere with your own work.

Entertainment plans. All plans for entertainments in which the children participate should be taken up with the superintendent, and all social functions given in school buildings should have the approval of the principal of the school. Entertainments on playgrounds where money is collected must have the approval of the superintendent and the proceeds spent for the benefit of the playground in ways approved by the superintendent.

Absence from ground. Directors wishing to be absent from the ground should put in a written request for such leave at least twenty-four hours before the leave is to take effect. The only exceptions are emergency assignment from the office or sickness, in which case the office should be notified by telephone.

In case of accident. In case of serious accident, have the injured person removed to a quiet, cool room, notify the parents, find out whether the family has a physician they wish called. Notify the police ambulance. Get the name and address of the injured person, a few names of witnesses. Make a record of accident and report it immediately to the office.

Coöperation. Remember the rights of members in

regard to protection of property. Cooperate with health agencies, police and juvenile courts.

Use of the playground on Sunday. It is usually better not to organize on Sunday match games in which children are involved. Have a minimum amount of organized activity for children.

Reports. Some type of attendance reports should be sent the superintendent each month. Methods of attendance taken vary greatly and no really satisfactory method has been devised. For securing attendance at general play activities though, it is possible to obtain an accurate count of membership in teams and in special activities.

There should be a monthly report of property damaged, of serious disciplinary problems and of inspection of apparatus. Regular application blanks should be filled out in case of absence from duty and approved by the superintendent. Weekly time sheets ought also to be required and each director should be held responsible for making out requisitions. Opportunity should be given every director to make suggestions as to how playgrounds can be made more effective.

Program planning. Certain sports are seasonal; others will be in season the entire year. In addition to the general schedule activities, events should be arranged in accordance with local conditions and the program may vary as facilities permit. Activities should be planned weeks in advance with substitute activities in case of bad weather, well thought out. Programs for special days should be planned and every one given something to do.

Evening use of playgrounds. Important as are playgrounds for children, their use ought not to be restricted to this group. The evening hours provide an opportunity for employed boys and girls and for young people and adults to enjoy the facilities of the park. Twilight baseball, volley ball,

PLATE NO. 272. HORSESHOE PITCHING HAS ITS APPEAL

horseshoe pitching, tennis and similar games and sports, social activities, music and dramatics are being offered on many playgrounds until nine in the evening, and frequently until later at centers where a system of lighting of grounds makes this use possible.

Physical Activities.

Under this large group of activities come athletic games, sports, swimming, hiking, boating and all the varied opportunities for out-of-door activities, facilities for which are so abundantly provided by park departments.

PLATE No. 273. BOWLING A POPULAR FORM OF PARK RECREATION.

Municipal Athletics.

This term is used by a number of park departments and recreation officials to designate the program involving the organization of teams and leagues in baseball, football, basket ball, volley ball and sports of all kinds. Schedules of games are arranged between the various park teams, and every effort is made to develop a city-wide plan which will reach industrial groups and organizations of all kinds.

What one city is doing. As an example of a city-wide program Milwaukee offers a program typical of a number which are being conducted. Here a municipal amateur athletic association has been organized which is conducted by the Extension Department of the Milwaukee Public Schools with the coöperation of the Board of Park Commissioners. The sports offered include the following:

Aquatics (Swimming and Canoeing). De Molay Meet; Newsboys' Meet; All-City Meet and Girl Scout Water Carnival.

Baseball. Outdoor Hard Ball; Sunday Leagues; Outdoor Soft Ball; Sunday Leagues; Insurance League; Industrial League; Public School League.

Basket Ball (All-City Tournaments and X-Y District Tournaments). Free Throw Tournament; Single Event and Team Event.

Bowling on the Green. Single Events and Team Events.

Cross Country Run.

Curling.

Dog Derby.

Football. Sunday Leagues.

Hiking.

Horseshoe. Men's Tournament; Industrial League.

Ice Hockey. Senior and Junior League.

Ice Skating. All-City Meets; De Molay Meet; Grammar School Meet; Girl Scout Carnival.

Indoor Baseball. Leagues and Tournaments.

Skiing. Daily Ski Jump; Juvenile (Stave Ski Jump); Juvenile (Barrel Stave Ski Jump); Cross Country Ski Run.

Soccer. Spring Season: Senior League and Juvenile League. Fall Season: Senior League.

Tennis. Indoor: Men's Singles Tournament. Outdoor: Men's Singles, Ladies' Singles and Men's Doubles Tournaments; Parent and Child, Grammar School and Girl Scout Tournaments.

Track and Field. Indoor (All-City Meets); Outdoor (All-City Meets and Newsboys' Meet).

Volley Ball. Men's League; Men's Tournament; Grammar School Tournament.

Winter Sports Carnival.

It is estimated that in 1925 there were 821 teams taking part in athletic programs, 11,638 entrants, and 663,364 in attendance. This program from Milwaukee shows something of the scope of the city-wide program of athletics. Examples might be quoted from many other cities.

PLATE NO. 274
AN EXCITING GAME OF VOLLEY BALL

A Municipal Athletic Association for Girls.

The Recreation Department of the Board of Park Commissioners of Minneapolis, in addition to its program of municipal athletics for boys and men, conducts a highly developed program for girls and women through the Girls' Municipal Athletic Association, of which the assistant director of recreation is in charge. The program and its organization are outlined as follows:

Diamond Ball. (May to September.) The league is divided into city, commercial and junior divisions. The city league is open to any team; the commercial to employees of the firms they represent; the junior league is made up of girls under sixteen years of age. Entrants' fee, $5.00 a team; referee's fee, $1.00 per game.

Basket Ball. (December to May.) Any girls' basket ball team in the city is eligible. Teams are divided into city and commercial settlements, intermediate and junior divisions, the age classifications being senior, intermediate (under 18) and junior (under 16). Entrants' fee, $5.00 a team; official's fee, $2.00 per game.

Volley Ball. (December to April.) Conducted in connection with basket ball and used as a substitute for girls who do not play basket ball, but want to enjoy competitive floor sport. Teams are permitted to make a charge of 15 cents to pay officials.

Tennis. (May to October.) Classes in instruction held at 10 cents per lesson. Tennis tournaments are conducted.

Bowling. (September to May.) The organization of a girls' municipal bowling league has been found successful in Minneapolis in meeting the needs of older girls and women who do not care for more strenuous sports. The entrants' fee of $5.00 per team purchases trophies and pays the fees of caretakers. In addition members pay the rental of the commercial alleys which are used. Leagues consist of city and commercial teams subdivided into handicapped and straightaway.

Horseshoe Pitching. (May to September.) Park and all city tournaments are held. Entry fee, 25 cents.

Swimming. All-round swimming instruction is given at municipal baths in winter and at Lake Calhoun in summer. Classes are divided into beginners and advance. A fee of $1.00 for twelve lessons is charged to pay for instruction.

Canoeing. (June to September.) Classes held once a week. Membership fee, 25 cents. In addition each girl pays 25 cents per lesson to meet the expenses of instruction and of renting the canoe.

Archery. (May to October.) Membership fee 50 cents to pay for the purchase of bows and arrows. Classes conducted weekly with a fee of 10 cents per lesson.

Rifle Club. (September to June.) Classes are held weekly. Membership fee, $1.00; instruction fee, 50 cents per month.

Horseback Riding. All year round. Lessons are given three times a week, classes being divided into beginning and advance groups. Membership fee, 50 cents per year; instruction, $1.00 for one and a quarter hours.

Winter Sports. (December to March.) There is a girls' municipal winter sports club which promotes figure skating, skiing and tobogganing. Lessons in skating

are given twice a week. Membership fee, $1.00 a year.

Hiking. All year round. Opened to both men and women. A hike is conducted every Saturday afternoon; there is an evening hike each week and an all-day Sunday hike once a month.

Sketching. All year round. The girls' municipal athletic program also includes sketching, a novel and greatly appreciated activity. The sketching club meets every Saturday afternoon out-of-doors during the summer; at the art institute during the winter. Membership, 50 cents per year; instruction is paid for by a charge of 20 cents per lesson.

The municipal athletics program, reaching as it does hundreds of thousands of boys and girls, young men and women, is one of the vitally important problems of the park recreation program. How to keep athletics free from professionalism and make the program count most for character development and citizenship is a problem concerning park and recreation executives everywhere.

Tennis.

Tennis has become so popular a game that park departments have found it necessary to issue rules for the use of courts. The Park Department of Dallas, Texas, has issued the following rules:

Children under fifteen years of age are not allowed on courts after 5 P.M.

Heeled shoes are not permitted on courts.

Courts may be reserved at Trinity Play Park by telephoning between the hours of 3 to 9 P.M. each day, except Sunday.

Courts will not be reserved for play during the hours of 9 A.M. to 2 P.M.

Reservations may be made one day in advance, except for Monday, in which case reservations may be made on Saturday.

No person will be allowed to play on any court within a period of six hours after having played with person in whose name a reservation has been secured.

Courts will not be reserved for longer than one hour, except in case of doubles, when two hours reservation is permitted. All reservations must be made on the even hour.

Records of all reservations will be carefully kept at Trinity Play Park for reference in case of any conflicting claims.

Persons with reservation on courts, who reach them twenty minutes late, may not claim court if same is being played on.

In case court is not occupied, any person may play on same at will until time of next reservation.

The reporting of any abuse or misuse of courts will be appreciated.

PLATE No. 275. SWIMMING LESSONS AT WESTCHESTER COUNTY'S RECREATION CAMP

At Tacoma, Washington, the following regulations are enforced:

Rule 1. If others are waiting to play, no players shall keep a court for more than two sets.

Rule 2. If a set gets to a six all score, one game shall decide the set in order that it be not unduly prolonged, this ruling being effective only when there are players waiting their turn at the court.

Rule 3. If four parties are waiting to play, the four should be able to play at the same time; that is, singles may be begun while no one is waiting, and if already begun may be finished, but singles should not be begun while others are waiting.

Rule 4. No persons within the tennis court enclosure are allowed to disturb players in actual possession of the courts by playing with tennis balls back of the service line.

Rule 5. Boys and girls, seventeen years and under, shall be hereafter designated as juniors, and eighteen years of age or more, as seniors.

Rule 6. No juniors will be permitted to play after 4.30 P.M. unless there are vacant courts and no seniors waiting to play. If juniors should start to play under these conditions, and seniors arrive and want the courts, they must be surrendered immediately upon conclusion of the set then in progress.

Rule 7. On Saturdays, Rule 6 will become effective at 2 P.M. instead of 4.30 P.M., and on Sundays and holidays no juniors will be permitted on the courts.

Rule 8. All persons shall conduct themselves properly while upon the courts, upon penalty of ejection, and no profane or objectionable language will be permitted.

Rule 9. In case of any injury to property belonging to the park, the same is to be reported to the policeman.

Rule 10. Players are responsible for any injury to the park property which is noticed while they are playing or immediately thereafter.

Rule 11. Players must not jump over the nets.

Rule 12. Playing will not be permitted on these courts on Sunday between the hours of 10.30 A.M. and 12.30 P.M.

Hiking.

Hiking for both children and adults is an activity which the facilities of many park departments make them well fitted to promote. A number

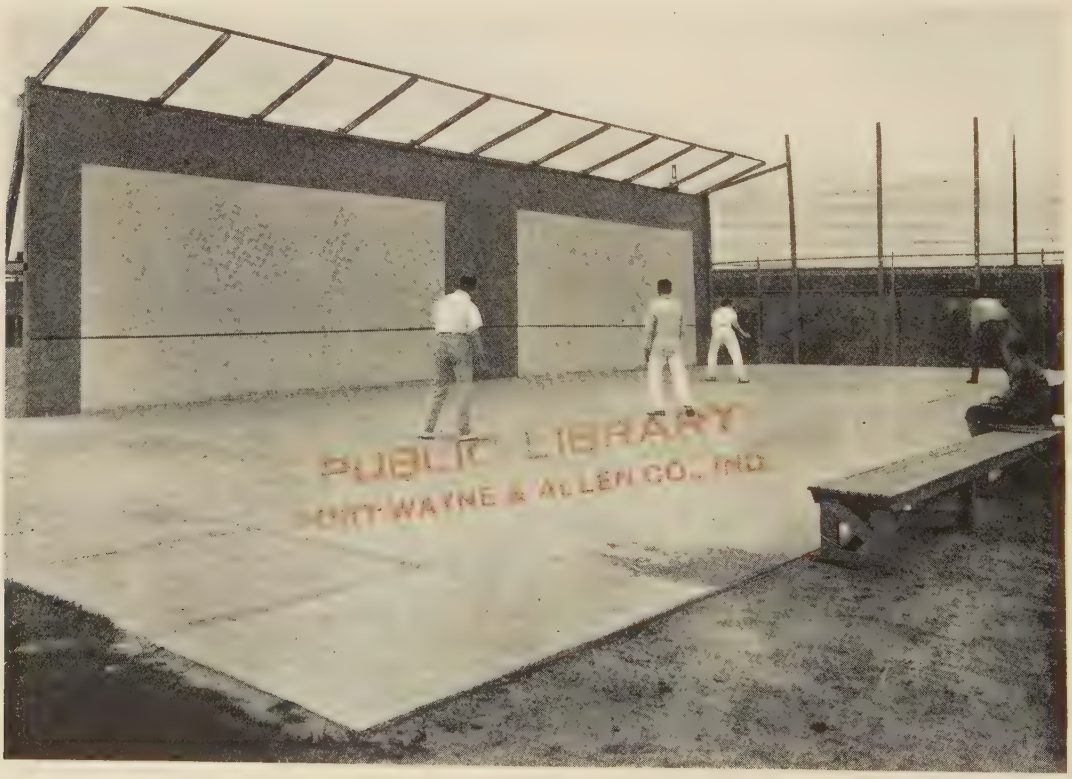
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PLATE NO. 276. AN EXCITING HAND BALL GAME

of park departments have organized municipal hiking clubs which are very effective in promoting sociability as well as in taking people into the outdoors and fostering an interest in nature lore. The constitution of the Minneapolis Municipal Hiking Club, conducted by the Park Department, is as follows:

Article I. Name and Object

1. The name of this organization shall be the Minneapolis Municipal Hiking Club.

2. The purpose of the club shall be to promote hiking as a recreation, for the health and joy of all who are interested, conducted in accordance with the highest ideals of sportsmanship and the best interests of all concerned, tolerating nothing that is for partisan or commercial gain.

3. The club shall be aware of its responsibility in carrying a municipal name. Nothing shall be promoted in the name of the Municipal Hiking Club without the sanction of the Recreation Department of the Minneapolis Park Board.

Article II. Membership Fees

1. A fee of $2.00 per year shall be charged every one who desires membership in the club. The club year begins September 1 and ends August 31.

2. Membership entitles members to such privileges of the club as:

(*a*) The *Minnehiker Bulletin*, mailed to member's address.

(*b*) The right to vote and become an officer of the club.

(*c*) Admission to all hiking and social activities of the club.

(*d*) A copy of the annual yearbook of the club.

Article III. Officers of the Club

1. Officers of the Municipal Hiking Club shall be elected for a term of one year, election to be held at the annual meeting in January.

2. Officers shall be: president, vice-president, treasurer, assistant treasurer and executive secretary. The executive secretary shall be appointed by the director of recreation and shall be a member of the executive committee.

3. The executive committee shall consist of the officers of the club.

Article IV. Meetings of Officers and Committees

1. A meeting of the club shall be held the second Thursday of every month during the hiking season at the recreation department, and shall be presided over by the president, or, in his absence, by the vice-president or other officers in order.

2. All new business, laws, rules, activities, amendments, etc., shall be acted upon at the regular monthly meetings.

3. There shall be a favorable note of a majority of all the officers and committee members to amend the constitution and by-laws of the Municipal Hiking Club.

4. Notice shall be given to all members of any amendment to the constitution and by-laws at least one week before such amendment be acted upon.

Article V. Finances

1. The treasurer of the club shall have a joint banking account with the executive secretary of the club, and both shall have the authority to write checks up to $50.00. Any check over $50.00 shall require the signature of both the treasurer and executive secretary.

2. A financial report, signed by the treasurer and the executive secretary, shall be presented to the club at each regular monthly meeting of the executive board and committees.

Winter Sports.

Winter sports have received a tremendous impetus during the past few years due to the emphasis of park departments on year-round use of their facilities. The following program from the Bureau of Recreation of a municipal park department shows how broad a scope a program of winter sports may have:

1. Skating. (*a*) Speed racing. (*b*) Figure. (*c*) Ice hockey.
2. Snowshoeing.
3. Tobogganing and bobsledding.
4. Skiing, cross country and ski slide.
5. Curling.
6. Special events. (*a*) Ice carnivals in costume. (*b*) Ice circus. (*c*) Treasure hunts in parks on skiis and snowshoes. (*d*) Winter sports week: winter sports, contests, events in which the whole city participates, stimulating community spirit and love of the out-of-doors and healthful activity in the open.
1. Snow modeling contests.
2. Boys' city championship ski meet.

3. Ten-mile ski race for championship of the Northwest.
4. Junior boys' city skating championship.
5. Horse racing on the lake.
6. Ski-joring race.
7. Play week curling Bonspiel.
8. Ice yacht races.
9. International team skating meet.
10. Boys' and girls' figure skating meet.
11. Ski jumping.
12. Moonlight hikes.
13. Tobogganing.
14. City hockey match.
15. Figure skating pageant and circus.
16. Northwest ski tournament.
17. International ski contest.
18. Contest to select the best winter sports boy and girl (under 16 years). Following events used: *Boys.* Ski jumping, speed skating, figure skating, ski running. *Girls.* Ski running, speed skating, figure skating.

To this program might be added snow modeling, ice boating for the more adventurous, and many games on the snow and ice.

Boating.

Where there are boating facilities, as there are in many of the large parks, the question of regulating the use of boats is an important one. The commissioners of Lincoln Park, Chicago, in General Ordinances for 1926, have issued the following instructions regarding the use of boats:

No person shall (*a*) bring any boat, yacht, float, raft or other water craft into or upon any of the waters under the control of the commissioners, tie to or in any way attach the same to any of the docks, piers, buoys or other moorings or to anchor in any of the waters under the control of the commissioners, without having first obtained a permit therefor and paying the fee required for such permit under the rules governing the use of the lagoons and harbors under the control of the commissioners. (*b*) Own, operate or control any boat, yacht, float, raft or other water craft, rent or let the same for hire upon, or for use upon, any of the waters under the control of the commissioners. (*c*) Keep in his possession any boat belonging to the commissioners for a longer time than he has paid for its use. (*d*) Rent a boat from the commissioners, leave the same at any place other than the landing or boathouse from which it was obtained, nor shall any person in any boat upon any of the waters under the control of the commissioners rock such boat or stand therein. (*e*) Rent a boat, allow more persons to enter such boat than are specified in the rules posted at the boat landing. (*f*) The permits provided for in this section may be issued by the general superintendent and manager upon the payment of the following fees for the season. For boats:

20 feet or under	$ 7.50
20 feet to 25 feet	10.00
25 feet to 30 feet	15.00
30 feet to 35 feet	20.00
35 feet to 40 feet	25.00
40 feet to 45 feet	30.00
45 feet to 50 feet	35.00
50 feet to 55 feet	40.00
55 feet to 60 feet	45.00
60 feet to 65 feet	50.00
All boats over 65 feet, per foot	1.00
All stalls (based on length of boats), per foot	2.00

(*g*) Any permit issued under the provisions of this section may be evoked at any time by the general superintendent and manager for violation of any of the rules governing the use of yacht harbors or other waters under the control of the commissioners. (*h*) Any person violating any clause of provision of this section shall be subject to a fine of not less than five dollars ($5.00), or more than two hundred dollars ($200.00) for each offense.

The following rules govern the use of boats on park lakes maintained by the Essex County Park, New Jersey:

Hours of boating, 10.00 A.M. to 10.45 P.M.

The number allowed in each boat shall not exceed the following: Two-oared boats, three adults or one adult and three children. Four-oared boats, five adults or one adult and five children. Children under sixteen years of age, unaccompanied by at least one adult, will not be allowed in any boat except passenger boats. Persons using the boats must not change seats while away from the landing, and must not land except at the regular landing places, nor rock the boat.

No boat will be allowed within fifteen feet of the shore, except in passing around the islands.

No fishing will be allowed from the shore, and will only be permitted from flat bottom fishing boats.

No more than two boats will be permitted to sail abreast and no procession of boats will be allowed.

No awning or sail will be allowed on any boat, except the motor boat.

All boats must carry lights after dark, but no searchlight will be allowed on any boat.

No person will be allowed in any boat except in a sitting position.

Boats must not lie at rest to the obstruction of traffic.

No private boat will be allowed on the lake unless accompanied by the owners. The term boat covers all craft on the lake.

The feeding of water fowl on the lakes, or any interference with them, is strictly prohibited, and will result in expulsion from the lakes or arrest, in the discretion of the officer.

The chief of the park police and the officers under his direction shall interpret these rules and see that they are enforced. Complaints must be made to the secretary at 800 Broad Street, Newark, New Jersey.

RATES OF FARE

	Children under 12	*Adults*
Circuit of lake, Branch Brook Park	$0.05	$0.10
Length of lake, Branch Brook Park	.05	.05
Circuit of lake, Weequahic Reservation	.10	.15

PARTY BOATS

Two-oared boats (large), per half hour	$0.20
Two-oared boats (small), per half hour	.15
Two-oared boats (large), per hour	.40
Two-oared boats (small), per hour	.25
Two-oared boats (steel), per hour	.35
Two-oared boats (steel), per afternoon or evening	1.00
Two-oared boats (large), per afternoon or evening	1.00
Two-oared boats (small), per afternoon or evening	.75
Four-oared boats, per half hour	.20
Four-oared boats, per hour	.40
Four-oared boats, per afternoon or evening	1.00
Boats with boatman, per half hour	.25
Boats with boatman, per hour	.50
Fishing boats, per half day	1.00
Only six fish allowed to each boat.	
Care of canoes, per week	.75

Fishing.

In some parks fishing is permitted. In New Orleans, Louisiana, city park fishing is permitted in season on payment of fifty cents per rod for the privilege of six hours of fishing. Only one hook is allowed on the lines used in casting. Anyone desiring to fish must secure a ticket at the boathouse.

Camping.

Another activity with which park departments are becoming increasingly concerned is camping. Starting with the provision of fireplaces and facilities where people coming to the park may cook meals, the camping idea has progressed through the overnight camp and intown camp, to the full-time summer camp, largely for the family, in which people pay their way and are able to secure outings at minimum cost. The following schedule from a California city shows how inexpensively this is being done.

COST FOR THIRTEEN-DAY OUTING

	Adult	*11–14 Years*	*8–10 Years*	*6–7 Years*	*3–5 Years*	*1–2 Years*
Board and lodging	$15.00	$13.50	$12.00	$10.00	$8.00	$3.00
Transportation	11.00	11.00	5.50	5.50	.....	.....
Total	$26.00	$24.50	$17.50	$15.50	$8.00	$3.00

Children under 12 years half fare.

To obtain these rates the minimum number in attendance cannot be less than one hundred and fifty. Two hundred and fifty, however, is believed to be the maximum size such a camp should reach if it is to maintain a feeling of friendliness and coöperation.

A typical day in camp. The description of a day in camp will best give the viewpoint of a camp.

7.00 A.M. Rising bell.

7.30 A.M. Breakfast. At breakfast there will be announcements of special activities for the day; hikes, nature trips, etc. Announcement will be made of the different people to help during that day. (This has been previously posted, so that it will not interfere with anyone's plans for hikes and fishing trips for that particular day.)

8.00 A.M. Campers return to tents to put their sleeping quarters in order for morning inspection.

8.45 A.M. Morning inspection.

9.00 A.M. Nature adventure trip starts out for the day, hiking parties leave for destinations, mail delivered, campers write letters or read, children in the wading pool, men play horse show, older children on the field playing baseball, father and son starting out to fish (they should have been out much earlier), nurse has open hour for consultation, "peelers" for the day prepare vegetables.

10.00 A.M. Swimming hour. The swimming will occupy the time of most of the people left in camp.

12.00 M. Lunch.

1.00 to 2.00 P.M. Loafing hour.

2.00 to 4.00 P.M. Swimming.

5.00 P.M. Dinner.

5.30 to 8.00 A.M. Twilight hikes, horse show contests, evening baseball, games, horseback riding, reading, chatting, loafing.

8.00 P.M. Rousing camp fire. All hiking trips and riding trips return for the camp fire. It is the rallying point of the day. The program will be varied with group songs, individual musical contributions, minstrel shows, dress-up parades, one-act plays and other things within the grasp of the imagination of the group in charge.

9.00 P.M. Adjournment of camp fire.

9.30 P.M. Lights out.

This program outline, of course, has only been fragmentary. It would be supplemented with overnight camping trips, horseback rides, beach suppers, back country trips, and many other things which would come in the "day's work" in camp.

The staff. The following staff is arranged on the basis of a camp of two hundred and fifty. It will be noted that some of the staff receive only maintenance; others only part salary.

Position	*Monthly Salary*	*Duties*
Manager	$175.00	General oversight, schedules, activity, meets guests, adjusts differences.
Assistant Manager	150.00	Orders supplies, checks in deliveries, supervises store, care of property.
Nurse	50.00	As needed.
Store Clerk	30.00	Helps assistant manager.
Director of Activities	75.00	Conducts activity, hikes, trips, evening campfire overseer.
Children's Playground Director	25.00	Supervises playground from 2 to 4 P.M.
Life Guard (2)	25.00	Guard pools and teach swimming 10 to 12 A.M. and 2 to 4 P.M.
Nature Guide	25.00	Conducts trips 8 to 11 A.M.
Sanitary Inspector	20.00	Inspects all wash rooms and latrines — keeps them clean.
Handy Boys (2)	20.00	Help as needed.
Pantry Helper	50.00	Cares for food taken from tables, also pies, cakes, butter, bread, etc.
Dining Room Manager	75.00	Assigns volunteer help to K. P. and to preparation of fruits and vegetables.
Chef	175.00	Head of cooking staff.
Second Cook	115.00	As assigned by chef.
Baker	125.00	Baking of bread, cookies, etc.
Dishwasher (3)	70.00	Wash dishes, pots, pans and clean up kitchen.
Caretaker Year Round	75.00	General care of camp.
Mechanics as needed	125.00	Special assignment.

These salaries include maintenance.

Many other activities of the physical type might be mentioned. Among these are swimming and golfing, which will be discussed later in the chapter.

Nature Activities.

Hiking, which has been suggested as so important an activity of the recreation service, may be effectively used to help arouse the interest of children and adults in nature lore. Birds, trees, flowers and other forms of plant life may be pointed out in the course of hikes and information given regarding them. There are, too, many nature games which add greatly to the enjoyment of the hike.[1]

A zoölogical contest. The Park Department of Dallas, Texas, has pointed the way to a particularly interesting activity for park playgrounds in its zoölogical contest, the purpose of which is to familiarize the children of the city with the specimens at the Marsalis Park Zoo and to increase the use of public parks. A selected list of one hundred and twenty-five specimens covering three classes comprises the material for this contest. The classes are as follows: *Mammalia:* Highest order of vertebrates. *Aves:* This class contains the vertebrates characterized by feathers and wings. *Reptilia:* In this class are the animals which creep and crawl. Each cage is numbered, the name being removed for the period prior to and during the contest, which lasted from November 7 to November 22. The children were permitted to give either the common or the classical name of the species and to study the specimens for the entire week, securing their answers either by library reference or from other sources at their disposal. Cards were printed containing two columns, one for the name of the animal under each class and the other for its habitat.

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PLATE NO. 277
AN ARTIST IN SNOW

A botanical contest. A similar contest has been promoted by the Dallas Park Board, in coöperation with the *Times Herald*, in a botanical contest designed to interest the children in shrubs and flowers propagated in the city greenhouses. The contest is divided into two periods, study and examination. Fifty plants are selected and arranged in one of the greenhouses

[1] Excellent suggestions for nature games are to be found in a pamphlet by Prof. W. G. Vinal, *Nature Games*, published by Comstock Publishing Company, 15 cents.

for the children to observe and study their characteristics. A placard giving the name and stating the method of propagation is placed beside each plant under consideration, and allowed to remain there during the entire study period lasting approximately one month. At the end of that time the placards are removed and the plants rearranged in number. Contestants are asked to identify the plants and tell the methods used in propagating them on a card containing two columns. One column, headed "Name of Plant," provides space for the names of seventeen plants; the second column, directly opposite, is headed "State How Plant is Rooted." The following plants are included in the contest: Acalipha, Axalis, Antirrhinum (Snapdragon), Aralia, Asparagus (Plumosus), Asparagus (Sprengeri Begonia), Cactus, Carnation, Coleus, Croton, Cyclamen, Cyperus (Umbrella Palms), Dracæna, English Ivy, Caladium (Elephant Ear), Cuphea (Cigar Plant), Boston Ferns, Maidenhair Fern, Wild Fern, Whitmanii Ferns, Ficus (Rubber Plant), Geranium, Hibiscus, Jerusalem Cherries, Bush Lantana, Weeping Lantana, Palm (Kentia), Palm, Phœnix, Pandanus, Pansy, White Moon Vine, Blue Moon Vine, Mexican Morning Glory, Salvia, Sansevieria (Rattle Snake Cactus), Santolina, Strawberry Plants, Verbena, Periwinkle, Impatiens or Sultani Rose, Pineapple, Devil Ivy, Althernanthera, Wandering Jew, Oleander, Pepper Tree, Cow Horn Lucus, Poinsettias and Plumbago.

The contest created considerable interest among the children and hundreds of them frequently visited the greenhouses at City Park to prepare themselves for examination. Many mothers came with their children to help in this study. Several school teachers assisted their pupils and all of the park board recreation supervisors took groups of children to the greenhouses and instructed them in rules and requirements of the contest. Such activities arouse the interest of the child in nature and help create in him an appreciation of what parks have to offer.

Community Music.

A number of park departments are offering the opportunity for children to participate in musical activities through harmonica bands, toy bands, playground orchestras, ukulele contests and other forms of activities. The Park Department of Memphis, through its recreation division, has organized what are known as "household bands," in which the following instruments are featured: Combs covered with tissue paper; kazoos; harmonicas; a fork suspended on a string and struck with another fork; preserve crocks and basins placed on a table or wooden box and struck with a ruler; a bunch of keys giving a sleigh bell effect when rattled; saucers set in a wooden table and struck on their edges with a pencil, the wrist

being held loosely; a large poker or long shovel hung from a string and struck with a sharpened steel or cold chisel and a metal tray struck with a gong stick.

Band concerts provided by park departments have for many years provided enjoyment for large groups of people. With the development of the radio, amplifying and broadcasting systems are making it possible for people to be reached in all parts of a park. In most instances the Park Department, from its budget or from a special city appropriation, employs local bands. Sometimes, however, it is possible to secure volunteer bands. In Indianapolis, of the forty concerts given in 1924, twenty-two were free concerts by volunteer bands — police, firemen and high school bands. Such an arrangement, while possible in some cities, could not be successfully worked out in others because of the attitude of the musicians' union, which

PLATE No. 278

COMMUNITY MUSIC WAGON USED ON THE PLAYGROUNDS AT SALEM, MASSACHUSETTS

A special body has been constructed on a Ford chassis and a piano installed. Any community enterprise may secure the use of this equipment by making an application at the office of the park and recreation department and paying for the driver.

under certain circumstances might oppose such action. In Louisville, Kentucky, where a protest on the part of the union against concerts in the parks by volunteer bands was taken to court, it was ruled that the park department was free to give such concerts.

Community singing has in many cities become a popular feature of the community music program, often in connection with band concerts. Many thousands of people took part in the community singing program arranged on a tremendous scale by the South Park Commissioners. A large number of cities are providing opportunities of this kind under the leadership of experienced song leaders, who may in some instances be volunteers. The organization of bands and orchestras for adults is a form of community music activity undertaken in a number of cities.

Many park departments have outdoor facilities which are being used for musical entertainment. At the Water Theatre at Nibley Park, Salt Lake City, the recreation department puts on a series of art programs once a week during the summer, when programs of dancing, drama and music are presented by local associations, who give their service free. Here the civic opera gives its annual performance, "The Fortune Teller," by Victor Herbert, being one of the operas presented after six weeks of rehearsing. More than twenty thousand people witness the performance each year. In the municipal theatre at Forest Park, St. Louis, ten weeks seasons of grand opera and light opera are given under the auspices of the Municipal Theatre Association. Many other events are conducted at the theatre.

Community Drama.

The facilities of parks are being increasingly used for dramatic presentations of various kinds. For children there is the informal story dramatization in corners of the playground, the more formal play production, puppetry and all the forms of drama so delightful to children. The popularity of the informal and outdoor corner theatres is attested to by the experience of Los Angeles, where such a theatre, known as "The Little Lattice Playhouse," is provided at the Barnsdall Park. Each week entertainments are given, with a program provided by the playground children. One such program presented the Senior Boy Scout Band, the dramatic group from Arroyo Seco Playground in "The Clown of Doodle Doo," several costumed folk dances from Pecan Playground, accompanied by two violins and flute from Exposition Playground, and Robin Hood stories by the gypsy story-teller. The playhouse has a well-sodded stage of ample dimensions for large folk dancing groups, and approximately two hundred seats have been placed upon the turf in tiers, making a shady little amphitheatre for summer afternoon use.

The Memphis Park Commission holds an annual play tournament for children. Each playground contributes a pantomime for which the children themselves have made the drapery. Points are awarded on the basis of excellence and dramatization, rhythm, costumes and properties.

Parks furnish unexcelled facilities for festivals and pageants and are the scene of many beautiful productions. Closing festivals for the playgrounds, community celebrations and city-wide pageants are frequently given. The presentation of out-of-door plays such as Shakespeare's "Merchant of Venice," presented at Nibley Park, Salt Lake City, by the playground children, are helping to make parks centers for many thousands of people.

PLATE NO. 279. IN THE PUPPET THEATRE IN LOS ANGELES

Another activity of park departments serving large masses of people is the motion picture show which a number of the departments are giving. Motion picture machines are carried from park to park, the pictures being shown on large screens. Some park departments have found that in addition to renting the films from commercial houses it is possible to secure educational films sometimes free of charge from the extension division of the state universities and colleges.

Social Activities.

As has been suggested, parks, to many people, are the social centers where they meet their friends and find social enjoyment largely in an unorganized way under their own leadership. Very often, however, careful organization is employed to extend the usefulness of the recreation service in creating social opportunities, and programs of social games and activities are offered on evening playgrounds and at other park centers.

Picnicking.

The provision of picnic facilities represents one of the greatest services of park departments along social lines. Here organizations can do much to increase the enjoyment of large groups such as employees of an industrial plant, Sunday schools and other groups who may wish to have a more formal form of activities. To meet this need picnic kits may be provided, containing necessary equipment for carrying out a program. The practice is also being followed of providing a leader to direct the program. The kit may be a bag of brown canvas three and one-half feet high and eighteen inches in diameter, with a draw string at the top and containing the following supplies: 2 sets of indoor baseball; 2 twelve-inch and 2 fourteen-inch outside seam baseballs; 12 picnic balls; 1 volley ball and net; 1 tug-of-war rope, one and one-half or two inches, twenty-five feet long; 2 or more sets of horseshoes and iron pins, three-fourths inch iron; 20 burlap sacks for sack races; 20 skate straps for three-legged races; 2 basket balls; 2 dozen ice

PLATE NO. 280. MOVING PICTURE BOOTH

Type of moving picture booth used in conducting the extensive moving picture program carried on in the parks and playgrounds by the Dallas, Texas, Park and Recreation Department. Booths cost from $87.50 to $100 erected.

cream spoons; 2 dozen wooden eggs or round blocks a little smaller; 2 dozen bean bags; 2 dozen small candles (Christmas tree candles); 4 bicycle rims or hoops. There should also be 2 clotheslines to stretch for start and finish of dashes; 4 beetles, cotton sacks stuffed with rags or made of canvas, eighteen inches long and three inches in diameter, stuffed with sea grass; 1 pair of boxing gloves; 4 blinders, such as used by lodges in initiations; 2 dozen clothespins; 4 sets of letters for spelling races, each set a different color; a pump and lacing needle; a box of soda crackers; and song sheets.

A suggested program for a large group is as follows: Community singing. Athletic events and races. Kiddie kar race for children six years and under. Fifty-yard dash for boys under fourteen years. Fifty-yard dash for girls under fourteen years. Shoe race for boys under fourteen years. Siamese twin race for girls under fourteen years. Peanut scramble for boys under sixteen years. Penny scramble for girls under sixteen years. Fifty-yard dash for men. Fifty-yard dash for women. Tumbler race, nose and toe, or wheelbarrow race for men. Hoop rolling, push balloon, put on and take off or shoe race for women. Sweetheart and beau race, office *vs.* factory. Tug-of-war, blonds *vs.* brunettes; married men *vs.* single men; children *vs.* parents. Baseball game and dancing. Feature contests: blind boxing. Polo game or kiddie kars by two departments. Ricksha race. Prize dance. Awarding of prizes.

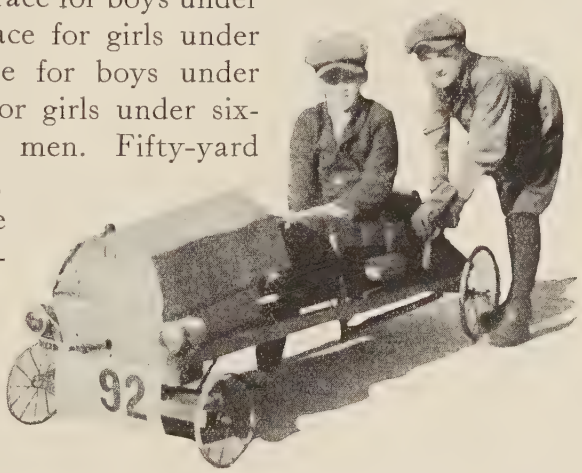

PLATE NO. 281. A PUSHMOBILE RACE HAS A THRILL OF ITS OWN

It is necessary to safeguard park property and the people using picnic facilities by enforcing certain rules and regulations regarding the use of the grounds. In New Orleans the following provisions have been made for the use of picnic grounds: "Picnickers are requested before retiring from the grounds to gather all paper, bottles, cans or other refuse matter left by them and deposit same in the waste barrels provided for the purpose. Picnic permits are issued at $1.00 each, which must be obtained in advance. This amount will be returned if parties comply with above requirements. Tables are for rent at 50 and 25 cents each, with two benches, also barrels and tubs for water, for the benefit of the park fund. The same may be had by applying to the park keeper."

The following rules are enforced by the East St. Louis, Illinois, Park District: "No picnics shall take place in any park without a written permit

of the superintendent of parks, in which permit shall be designated the place where it is to be held. Picnics permitted for Sunday and secular schools must always be accompanied by their respective teachers and masters, who will be held personally responsible for all infringements by the scholars of these rules and regulations. No person shall intrude him or herself upon a picnic without consent of those in charge of it, nor disturb the peace and quiet of any picnic or person attending the same, within any park. Parties holding picnics in the said parks must clean up the grounds that have been occupied by them, on quitting them, and remove all paper and litter."

Dancing.

A few park departments have felt it necessary to provide opportunity for social dancing. Mention has been made in Chapter V of the dance platform provided in Hartford. In other cities, field houses and community centers are frequently used for municipal dances. These dances are carefully safeguarded through proper supervisory methods which include chaperonage, insistence on proper dancing position, the exclusion of young people under a certain age, usually eighteen, and the enforcement of regulations against smoking and drinking. The kind of music provided is particularly important, affecting more than any one element the conduct of dancers. While it must necessarily be lively and spirited, and the rapid syncopated rhythm in use at the present time is generally approved in its best form for social dancing, the blatant dance music consisting of noise without melody is denounced by all who are concerned about decent dancing. There should be a careful selection of the type of music before the dance begins and only approved orchestras should be engaged. The combination of instruments recommended for dances is as follows: Three pieces — violin, piano and clarinet; four pieces — violin, piano, clarinet or cornet and cello; five pieces — violin, piano, clarinet (or cornet), cello and trombone or drums; seven pieces — violin, piano, clarinet, cello, trombone and drums.

Constructive Play.

The interest of children and adults in making things useful and beautiful has led to a tremendous development in the handcraft program, particularly in connection with children's playgrounds. The range of the handcraft program is almost unlimited. A few of the articles which are made on the playgrounds include pushmobiles and coaster wagons, lanterns, kites, bird houses, boats, model airplanes, radios, toys of all kinds, musical instruments, favors and similar articles. Added interest to constructive play is given by the fact that special competitive events center about many of these articles. Pushmobile races, kite flying contests, boat races, lan-

tern parades, model airplane contests and a great variety of other contests provide delightful hours.

For adults there are many forms of handcraft. One of the most interesting of these is the quilting club for women, organized in connection with the South Park Commissioners of Chicago. There are many social features connected with a club of this kind which make it doubly interesting.

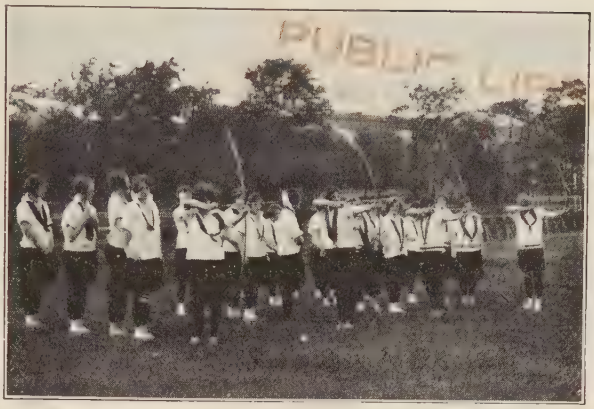

PLATE NO. 282
ARCHERY EQUIPMENT IS FOUND IN MANY PARKS

The activities which have been mentioned by no means represent all the features of the recreation program. They are, however, typical of many which are being developed.

SWIMMING POOL AND GOLF ADMINISTRATION

There are a number of facilities peculiarly the concern of park departments. Among these are swimming pools and municipal golf courses.

Swimming pool administration. Successful swimming pool operation is dependent, in the main, on three factors: The construction of the pool, the operation of the purification devices, sanitation and the supervision of the bathers. Problems of construction have been discussed in Chapter V, of sanitation in Chapter XVI. This discussion will concern itself with a few of the problems of supervision and administration, the handling of clothing, the supervision of bathers, and similar problems.

PLATE NO. 283
WHAT IS MORE FUN THAN WATER SPORTS?

Guards. There can be no general rule which will determine the number of life guards necessary at any pool, since this necessarily depends on the attendance and the design of the pool. In a circular pool with the deep section and diving platform at the center, one guard might successfully care for three hundred or four hundred bathers, while in a rectangular pool three or four men might be

needed. Life guards should be excellent swimmers, who have passed such tests as those issued by the American Red Cross, and who are capable of rescuing struggling bathers without difficulty. They should be on duty whenever the pool is opened to bathers.

Shower bath supervision. A bath in warm water with the use of soap should be required of every one entering a pool. Many pools are built in such a way that entrance is through a shower room past an inspecting attendant, who permits only those who have bathed and who are free from surface signs of disease to enter the water. Some indoor pools may be entered only by a passageway under a row of showers, graduated in temperature down to a cold spray at the end just before the plunge. In men's showers, where a common shower bathroom is used, it is relatively easy to make sure that cleansing baths are taken. In women's bathhouses, where the individual shower and dressing compartment is the rule, it is difficult for a matron to secure any approach to this type of supervision.

Workers in charge of giving out suits and supplies. Bathhouse management requires the provision of workers for the collection of fees and the distribution and collection of bathing suits, towels and locker keys. Exits should be arranged from locker rooms in a way which makes possible the collection of towel, suit and key by the attendant who distributes them. A locker room attendant for women and one for men should suffice. From four to six workers, one swimming pool authority has suggested, will usually be needed in connection with the swimming pool, depending on the size of the pool and number of patrons. The length of the working day may make another shift necessary.

Dressing accommodations. On entering the bathhouse the bather procures a ticket, which is surrendered for a basket or locker key, or which may be collected at the entrance of the pool. Following this there is usually a counter provided where patrons may check their valuables. Then comes the problem of the care of clothing. There are two general methods in use. By the first, the patron receives a basket, retires to a dressing room, where he puts on his bathing suit, placing his street clothes in the basket, which is turned over to the attendant for safe keeping. The second method provides for each bather to receive a key to a locker in a dressing room, the bather retaining the key while he is in the water. The dressing room may be a large room for a number of people or an individual dressing room for those wishing to pay extra for privacy.

Where patrons are regular in attendance, as at clubs, the individual locker with key or combination locker is most useful. In public locker rooms where each person is assigned a locker for every visit, the provision of suitable means of safeguarding the personal belongings becomes more

difficult. Although several charges are made for lost keys and tags, the expense and bother involved in replacement have been so great in public installations that the practice of having spring locks on the doors and an attendant with a master key in charge of opening the lockers has sometimes been adopted. The basket method of handling clothes is objectionable to some patrons on account of the mussing of clothing in folding to fit the basket. The advantage of this method of caring for clothes is that it allows more patrons to be accommodated in a locker room of a given size. It should be easy for the attendant to see every one in the locker room as he passes down the main aisle. This is necessary to prevent the hiding of sneak thieves and the committing of annoyances by a few objectionable persons.

Care of suits and towels. It is desirable in artificial pools that all suits and towels be supplied and cared for by the management. If individually owned suits are used, they should be of prescribed style and material, and should be laundered and stored at the pool by the management. Bathing suits for women should be of the simplest type, made of wool or cotton of undyed material or tested for fastness of color. At the artificial pools both sexes should be required to wear bathing caps. When an indoor pool is used exclusively by men, nude bathing is usually required. A frequent requirement concerning stocks of towels and bathing suits is to insist on a sufficient supply to allow twenty-four hours' storage of clean suits. Suits and towels should be washed in hot water and soap, rinsed thoroughly and dried each time they are used. When they are brought back to be issued again they should be handled carefully, not allowed to lie in baskets or on shelves which have held dirty suits. Neither should they be issued at a window from which dirty towels and suits have been taken out.

Admission fees and charges. Where admission fees are charged they usually run from five and ten cents per child to fifteen, twenty and twenty-five cents per adult. In most instances five cents is charged for towels; ten cents for suits. In some cities, the charge for suits and towels is included in the admission fee.

Instructions to bathers. Suitable placards, embodying personal regulations and instructions, should be posted conspicuously in the pool room or enclosure and in dressing rooms and offices. The following instructions are usually included in such notices:

1. All bathers shall use shower baths, including soap, if necessary, before entering the plunge. (The plunge is not intended as a bathtub.)

2. Bathers who have been outside the bathhouse or plunge enclosure shall not re-enter without passing through a footbath and using a shower.

3. Bathers shall be forbidden to wear private bathing suits that are not properly laundered; light colored or undyed wool is suggested.

4. Women shall wear caps while in plunge.

5. Persons not dressed for bathing shall not be allowed on walks surrounding plunge, and bathers shall not be allowed in places provided for spectators.

6. No persons suffering from a fever, cold, cough or inflamed eyes shall be allowed the use of the plunge. (These disorders may be transmitted to others.)

7. No person with sores or other evidence of skin disease, or who is wearing a bandage of any kind, shall

be allowed the use of the plunge. (A bandage may conceal a source of infection.)

8. Spitting in, or in any other way contaminating, the plunge, and spitting on floors, runway, aisles or dressing rooms shall be prohibited.

9. Public combs or brushes shall not be furnished, and such articles left by bathers shall be permanently removed.

10. Eating within the plunge enclosure shall be prohibited.

11. Bringing or throwing into the plunge any objects that may in any way carry contamination, endanger safety of bathers, or produce unsightliness, shall be prohibited.

The majority of our patrons will observe these rules of their own accord and will render us a great service by reporting any infractions to the attendants. Any person failing to comply with the foregoing rules will be immediately expelled and denied the future privileges of the bathhouse.

The following rules and regulations are enforced by the Dallas Park Board for the use of the Lake Cliff Swimming Pool:

1. That all swimming pools, located in any park in which the privilege is extended to persons to bathe and swim therein, shall be controlled by, and such persons using the said pools shall be governed by, the following rules:

(*a*) That all persons using the swimming pools shall check their valuables with the officer or employee designated to receive the same and shall receive from such officer or employee a check or receipt covering the article or articles so checked. No article or valuables shall be checked which shall be of a value exceeding $25.00. No officer or employee shall be responsible for any valuables that have not been checked and no responsibility shall lie against any such officer or employee for a greater amount than $25.00. That all persons making any claim against any officer or employee for loss of any article or valuables shall file such claim in writing with the officer or employee in charge of such pool not later than ..... days after the time of such loss, and such claim shall state as near as possible an exact description of the article or articles lost, the exact time when the same was checked and shall also be accompanied by an exact description of the check or receipt for any such article or articles. That all persons using the said pools shall look to the officer or employee in charge of the same in case of the loss of any valuables, and under no circumstances shall the City of Dallas be held liable on account of the loss of any article or articles, or valuables.

(*b*) No persons shall be allowed to, in any manner, bring any bottles or glassware or broken glass into or about the pools.

(*c*) Every person desiring to use the pools shall first use the shower before entering the pool.

(*d*) Persons having their own bathing suits shall not use one-piece bathing suits; all suits must have skirts.

(*e*) No smoking shall be allowed in the bathhouses.

(*f*) All signs and rules promulgated by the park board shall be strictly observed by users of the pools.

(*g*) All users of the pools, while in the pools, are forbidden to do or commit any of the following: 1. Dive off another person's shoulders. 2. Splash water on others in such a manner as to interfere with others, or use the pool in such a manner as to create disorder or disturbance. 3. To act with indecent familiarity towards each other, which shall include spooning and the like. 4. Take floaters, inner tubes, etc., in deep end of the pool. 5. Curse or swear or use indecent language. 6. Go down slides standing up. 7. Take non-swimmers or beginners beyond the ropes. 8. Throw rocks or any object into the pool. 9. Run on the platform. 10. Start whip circles. 11. Enter pool under influence of intoxicating liquor. 12. While in pool no person shall indulge in eating any food or smoking or chewing tobacco. 13. Use spring board with others. 14. Dive in shallow water. 15. Only expert swimmers shall be allowed in deep end of pool.

(*h*) All persons using the pool do so at their own risk and responsibility.

(*i*) No person shall use the pool who is in a diseased condition or who is suffering from any skin disease or any character of contagious or communicable disease.

(*j*) The officer or employee in charge of the pool may exercise the right to eject anyone who by disorderly conduct or on account of his constant infraction of the rules, or on account of any lewd or indecent conduct, becomes objectionable, and may also refuse to permit any such person to use the pool.

(*k*) That it shall be the duty of all persons to act in an orderly manner so as to permit the largest use and enjoyment of the pool by all persons, and no person shall willfully interfere with or willfully annoy or disturb others in the proper use of the pool, and whenever any officer or employee in charge calls attention to any such act or acts being committed or likely to be committed, any person offending shall immediately desist from any such practice. All persons using the pool shall seek to comply reasonably with the directions of the officer or employee in charge of the preservation of good order and lend such officers or employees in charge their full assistance and coöperation.

(*l*) That any willful violation of the above rules shall constitute an offense which shall subject any person so violating the same to the fine prescribed by ordinance which shall not exceed the sum of $50.00 upon conviction in the Corporation Court, provided that such and every act committed shall constitute a separate and distinct offense, all of which shall be prescribed by ordinance passed by the Board of Commissioners relative thereto.

2. The following rules and instructions shall govern the life guards at all swimming pools:

(*a*) One guard must be in the boat at all times.

(*b*) One guard must be on each life tower when there are bathers in deep end of pool, or at discretion of manager.

(*c*) One guard must be walking up and down wharf on east side of pool.

(*d*) Guards not allowed to smoke while on duty.

(*e*) Guard not allowed to carry on social conversation while on duty.

(*f*) Guards must direct attention to bathers in water.

(*g*) Guards must remain on duty until relieved by head guard.

(*h*) Guards must watch for disorder and indecent conduct of bathers and observers.

(*i*) Guards should keep in mind the fact that they are responsible for people in the pool.

(*j*) Guards must not congregate and talk to one another while on duty.

(*k*) Guards nearest bathhouse shall see that all bathers take shower bath before allowing them to enter pool.

3. Violation of any or more of the above rules will mean suspension for offending guard or guards.

4. It shall be the duty of the superintendent of the swimming pool to have each employee read and become thoroughly informed as to these rules and regulations governing.

5. That this resolution become effective from and after its passage, provided, however, that the terms and provisions of the rules hereinabove set out shall become effective and in force on the ..... day of ..... 192.....

The Administration of Golf Courses.

Park authorities probably more than any other group are concerned with the administration of municipal golf courses. A few general suggestions on the administration may therefore be helpful.

The staff. The success of a golf course and clubhouse will depend largely on the quality of their management. It is therefore highly important that the golf course shall be in charge of a competent man who understands the game. Such a manager should be entirely responsible for the course and its proper upkeep, and capable of handling all branches of the game and of supervising the workers on his staff. These workers should as far as possible be trained men, kept regularly employed so as to ensure having a good summer force. The great majority of the professionals employed, who serve as managers of the courses and who in many instances receive concessions as part of their salaries, are allowed to give lessons. Where a salary is the entire amount received by a manager, the average salary is approximately $150 a month, though in some cities $2,000 a year is paid, and in a few instances a still higher salary is given. Where concessions are permitted there is considerable variation. In one city the professional receives $100 a month and concessions on a twelve and one-half per cent basis. In another the salary is $125 a month, the professional receiving the golf concessions and from this amount paying the clerk. In a third city the salary is $75 a month plus one-half the receipts from lessons; in a fourth $5.00 a day, with the privilege of giving lessons. Many park and recreation officials feel that the professional should be paid a salary sufficient to permit him to give all of his time to the administration of the golf courses without being under the necessity of supplementing his salary by taking charge of the sale of food and other articles.

Other workers employed in connection with golf courses include greens

keepers, starters, janitors, locker attendants for men and women, caddie masters, foremen, laborers, cooks, clerks and similar employees. Information follows regarding workers and wages paid in a number of cities.

Jacksonville, Florida. A manager or superintendent is in complete charge of all operations and employees. His salary is $175.00 a month; he receives $35.00 per month automobile allowance and the free use of a cottage which is on the property. The professional who serves receives no retainer fee or salary, his income consisting of receipts from golf lessons, sale of golf equipment, mending, repairing and cleaning of golf clubs. Other employees consist of a starter who works seven days a week with a salary of $125.00 a month and two weeks vacation with pay, and a caddie master who receives no salary, but collects from each player 80 cents for each 18 holes, 70 cents of which goes to the caddie, 10 cents to be retained by the caddie master; for each 9 holes he collects 40 cents, retaining 5 cents for himself. In this way he averages about $200.00 a month.

There are three men employed at $2.75 a day, who are responsible for mowing the greens daily, six greens being the daily task of each man. He begins his work early in order to be out of the way of the players, and is permitted to leave as soon as he completes his task. There are two additional laborers employed at $2.75 a day. One is the man responsible for mowing the eighteen tees daily if necessary. The second is a tractor-machine man who mows the fairways and does other labor of a general nature. One man at $2.50 a day handles hose and waters greens and helps to keep traps hoed and cleaned. Another man, known as "bug man," at $2.50 a day, watches the greens for cricket moles and insects which tend to destroy the greens, and is responsible for exterminating them. (In this connection it is well to note that cricket moles are killed by locating their holes and shooting gasoline into the hole.)

Pittsburgh, Pennsylvania. The professional receives $118.00 per month, the privilege of giving lessons in the morning, and income from sale and repair of equipment; greens keeper, $150.00 per month plus house rent; locker attendant for men, $4.00 per day; for women, $83.50 per month; caddie master, $4.00 per day plus 5 cents per person.

Minneapolis, Minnesota. The professional at one course receives $150 per month; janitor, $4.40 per day; cook, $3.50 to $4.00 per day.

Dallas, Texas. The professional in charge of one of the courses receives $100 per month and all concessions on a twelve and one-half per cent basis. Laborers are employed at $3.20 a day, a foreman at $100.00 per month, and a clerk at $85.00 a month.

San Francisco, California. The professional is paid $100.00 per month, plus income from lessons; foreman, $8.00 a day; the workers in charge of the general maintenance of the course and the starters average about $5.00 a day.

Planning for a wise use of time. It is economy to plan and develop certain improvements for the course each year and to arrange to do all repair work on bad days in the winter. There are many things which can best be attended to in the spring. At this time stones may be removed from the fairways. It is also the time to learn which greens are most in need of drainage. Since the soil is fairly dry, greens should be wormed so that the poison will go down into worm holes. It is a good thing to know that the most effective poison in nearly all worm killers is bichloride of mercury.

Fees and charges. There is no general policy enforced regarding fees. While a few cities are maintaining free courses, the great majority are making a charge on a per game or per day basis, at varying rates: 10, 20, 25, 50, 75 cents or $1.00. A few cities have a monthly charge of $2.00 or $3.00, and in many cities there is a yearly fee for membership, ranging from $5.00, $10.00, through $15.00, $18.00 and $20.00. A few cities make a difference in the rates charged men and women. Houston, Texas, follows the plan of charging a nominal greens fee of 25 cents per round, except on two mornings of the week, when no charge is made. There is no charge

for golfers who begin their round before 7.00 A.M. or after 6.00 P.M. In many cities charges are doubled on Saturdays, Sundays and holidays.

The general experience has been that even with moderate fees it is possible in most instances to meet the operation expenses of the course and make needed improvements. Some cities have been able eventually to meet much of the initial expense in this way. One park superintendent has made this statement, that fees should be scaled up to the point at which they will meet maintenance charges where they do not already equal them. Such fees should, he believes, take care of a portion at least of the carrying charges arising out of acquisition of land and construction.

In Jacksonville, Florida, the yearly profit is from eight to ten per cent, the manager counting on an expense of $1,000 a hole per year for the entire expense of running the course, including the clubhouse. The income is based on the following charges: Yearly ticket, $25.00, entitling the player to play as much as he desires every day in the year and to have locker privileges, towel, soap, hot and cold water baths and porter service. Book of thirty tickets, $10.00, non-transferable even to members of the family; each ticket is limited to eighteen holes and includes locker privileges, towel, soap and bathing facilities when playing. Ticket for each eighteen holes, with locker and bathing privileges, 50 cents. Juveniles, boys and girls twelve to eighteen years of age, with locker and bathing privileges, yearly ticket, $10.00 per year.

Instruction and caddie fees. In many of the public golf courses professional instructors may be engaged. In some instances the professional, who may not be a city employee, will have the privilege of renting and selling clubs and balls. On the majority of courses caddies are furnished. In some instances there is no charge for caddie service; in others they may be employed at the rate of 35 or 50 cents a round. When two bags are carried a charge of 70 cents is made in some cities. The caddie master in charge of this part of the service is usually a city employee, who may have responsibility of issuing tickets and renting or selling clubs.

Maintenance budgets. Maintenance costs are an important consideration in initiating a municipal golf project. These costs vary considerably, in some cities being as high as $26,000. The maintenance budget, 1926, of the municipal golf course of Jacksonville is as follows:

DIVISION NO. 2 MUNICIPAL GOLF COURSE

Materials, Supplies, Equipment, etc.:		
Gas and oil	$1,400.00	
Fertilizer and distributor	1,000.00	
Mowers and upkeep	1,000.00	
Seed (winter grass)	500.00	
Tools, hose, etc.	300.00	$4,200.00

Clubhouse Repairs:		
Furnishings, towels, soap and laundry	$500.00	
Electric current	1,620.00	
		$2,120.00
General Expenses:		
Salary superintendent	$2,520.00	
Salary starter	1,500.00	
Tractor driver	1,200.00	
Salary caddy master	1,080.00	
Laborers, mowers, sprinklers, etc.	4,382.00	
Extra labor	1,000.00	
Stationery, score cards, etc.	100.00	
Telephone	75.00	
		12,577.00
		$18,897.00

Economy in purchasing equipment. Maintenance problems should be considered in buying equipment. A few extra dollars spent in the beginning in purchasing the most lasting equipment will save many dollars in repairs. It is good economy to allow men to stop work fifteen minutes earlier in the evening in order to give them time to clean their tools and put them in their proper places. Tools and machinery should be kept sharpened, oiled and in good repair for the sake of efficiency in work and saving in time and expense.

Clubhouse management. It is very important that high standards shall be maintained in the management of the clubhouse as well as the course itself. Every building of this nature should have a worker in charge from five o'clock in the morning until dark. There should always be on hand plenty of hot water and sufficient supplies for toilets and lavatories. All facilities should be kept clean. The public will be glad to pay for this service if for some good reason it is necessary to make a charge.

In Los Angeles, California, the clubhouse is in charge of a manager, who has supervision over the following employees: One cashier, two starters, one janitor and one officer on the links. The manager handles all the money collected from every service. Permits and tickets bear consecutive numbers and every one must be accounted for. Dining room sales are checked daily from a cash register. Players wear a button corresponding to the number of their permit. For example, in the case of monthly permits which are printed in red, red buttons are issued.

Rules and Regulations. The congested conditions which exist on most municipal courses make imperative strict adherence to golf etiquette and to playing rules and regulations. It is well to have these rules printed on the back of score cards as well as to have them posted in clubhouses and shelter buildings. The following regulations are enforced on the municipal golf course of Stevens Park, Dallas, Texas:

Suggested Rules.

1. All players must register before starting to play.
2. Each player is limited to the use of one ball at a time.
3. A single player must always give way to a properly constituted match.
4. No onlooker or caddie should move or talk during a stroke.

5. No player should pay from the tee until the players in front have played their second strokes, and are out of range two hundred yards, nor play up to the putting green until the players in front have holed out and moved away.

6. Players looking for a lost ball must allow other matches to pass them.

7. On request a match consisting of three or four players must allow a two-ball match to pass them. Any match playing a whole round may claim the right to pass a match playing a shorter round.

8. If a match fails to keep its place on the green and loses more than one hole in distance on those in front it may be passed on request being made.

9. Turf cut or displaced by stroke should be carefully put back.

10. Players and caddies who take the flag out must not stick it in the green. Golf bags must be left off the green.

11. Ladies must not go on the greens with high-heeled shoes.

12. Membership cards and starting tickets are not transferable under any condition and must be shown on request.

13. Players are requested not to purchase balls from men or boys who loiter on the course. Fewer balls will be "lost" if the players will observe this rule.

14. No children under twelve years of age will be allowed to play on the course.

15. Players who have played nine holes must give way to players on the tee ready to play.

16. All rules and notices must be strictly adhered to.

17. Players must either show membership cards or pay greens fee.

18. Membership cards subject to cancellation for violation of rules.

Ground Rules.

1. A ball driven into any bush or the dirt surrounding a bush shall be lifted and dropped no nearer the hole; penalty, one stroke.

2. A ball driven off of property is out of bounds and costs the player the distance and counts one stroke.

3. If a ball is driven into creek, players shall drop ball behind hazard; penalty, one stroke.

4. The regular teeing grounds must be used.

5. Player playing ball into water hazards who cannot immediately play another ball, must allow following match to pass.

6. No children under twelve years of age will be allowed on the course except when accompanied by adults.

7. Players must not touch ground with club in addressing the ball in a hazard; penalty, loss of hole in match play and one stroke in medal play.

8. Non-players will not be allowed on the course except when following a match as a gallery.

9. Four ball matches only will be allowed on Saturday afternoon, Sunday and holidays.

Advance reservations. In the municipal golf course at Houston, Texas, golfers are permitted to reserve starting time for days ahead. For each reservation of this kind an additional fee of ten cents is charged. Through such an arrangement players may plan twosomes or foursomes a week ahead. Their reservation then is listed in a book kept for the purpose and when the time arrives the starter calls the names. Only half the starting periods may be reserved in this way, the other being left open to serve the remainder of the public. Under the plan of operation, matches are started away at intervals of five minutes or twelve matches to the hour. Six of these twelve periods may be reserved. Players without reservation must await their turn in leaving the first tee and the rule "first come, first served" is in force.

At Jackson Park, Chicago, Illinois, the following rules are in effect:

On a "first-come, first-served" basis, persons desiring to play are accommodated by means of tickets entitling bearer to privilege to play. These tickets, which must be purchased before starting out on the course, are carried as credentials by the players after leaving the first tee and are checked from time to time while out on the course by game attendants assigned to that duty. The ticket sale opens not less than fifteen minutes before play can start, at dawn every morning. Applicants for tickets stand in one of two lines, according to the type of tickets they wish to secure. The person first in line has first choice under the conditions which follow:

1. *Advance reservation tickets.* Foursomes will be run off every five minutes. Those starting on the even hour and every ten minutes thereafter are subject to reserva-

tion not more than a week in advance. A ticket is issued entitling the holder to play at the time stated; he signs one reservation blank at the time of drawing the ticket, signing again when he starts to play on the day specified so that the signatures may be compared to insure against the transfer of the tickets.

2. *Daily reservation ticket.* Daily reservation tickets, which have similar provision as to signatures, are issued on the day of play in the order in which applicants present themselves. Foursomes play off five minutes past the hour and every ten minutes thereafter, alternating with foursomes of the class described above. The earliest applicant on the morning of any day has his choice as to the precise time at which he will play and secures a ticket stamped with the hour selected.

3. *Fill-in tickets.* If a holder of a daily reservation ticket or advance reservation ticket fails to appear, his place is taken just before the foursome starts out by a third class of applicants who either come too late to get an advance hour or who elected to take their chance that someone will fail to appear and who draw in consequent order what is called a "fill-in ticket." These fill-in tickets are subject to two conditions:

Holders must play when the number of the ticket is called and they are called in rotation. The first vacancy is taken by the man who first drew a ticket, the second vacancy by the second man, and so on. If holders of fill-in tickets fail to appear when their numbers are called and are passed, they have no further rights to play.

The second condition is that the holding of a ticket does not guarantee that a man will have the privilege of play. The ticket is sold subject to the condition that only such vacancies as may arise will entitle holder to play, and does not guarantee that any vacancies will occur. Play is conditioned, therefore, upon vacancies occurring.

4. *Issuing of tickets.* None of the tickets are transferable and all are issued through a cash register, which stamps the hour of play, the type of person to whom issued — whether man, woman, boy or girl — his place in the foursome and the person by whom the ticket is sold.

5. *Price and refunds.* For daily and weekly reservation tickets a charge of twenty cents is made; the daily fill-in ticket, fifteen cents. No refund is allowed, and unless tickets are presented before play starts they become void.

6. *Lockers.* No season tickets for play are provided for under this system, but season reservation of lockers is provided for, lockers being subject to reservation on and after March 1 of each year, until available locker space is exhausted. Lockers are of sufficient capacity to accommodate four occupants. Six dollars is the charge for a full locker for the season. In the order of application, those wishing to rent lockers may take a full locker, one-half, one-third or one-fourth of a locker, as desired, and the six dollars charge may be paid by a single occupant or proportioned among the number assigned to each locker.

7. *Tournament play.* By arrangement not less than two weeks in advance, so that notice advising the public of the projected tournament may be made on the bulletin boards, tournament committees may secure the privilege of running tournaments on the course, by reserving, in the name of the tournament to be held, the required number of tickets, making advance payment for same, and agreeing to use tickets so secured solely for tournament play. The committee is required to keep in public view the schedule of tournament drawings, so that anyone may see for himself that only legitimate tournament players are given the privilege of play under the tickets which the committee has secured in advance, and that such play is part of the scheduled tournament drawings. This does not permit any consolation play or extra rounds arising out of dispute or rivalries developed in the tournament.

Administering the Recreation Program

All these activities of the park recreation program with their various adaptations to the needs of children and adults call for leadership of the highest type; hence the workers, their relationship to one another, their responsibilities and the contributions they make are of primary importance.

Staff organization. On the recreation staff of a bureau or department of recreation under the Park Department there is first of all the executive who, in some cities, may be the park superintendent himself. In others the duties may be performed by a special assistant to the superintendent or by a worker known as superintendent or supervisor of recreation in charge of a special bureau or division. This is true of Minneapolis, St. Paul, Memphis, Indianapolis and many other cities which might be mentioned.

The recreation executive must be well versed in all technical phases of recreation with a personality which will win the loyalty of the staff. He must have skill in dealing with individuals and community groups and the statesmanship which will enable him to organize and keep in operation a constantly growing program. The duties of an executive in the organization and administration of park recreation include the selection, training and direction of workers; the purchasing and installing of apparatus and layout of playgrounds and athletic fields; the planning of buildings for recreation purposes; the celebration of holidays; the development of athletic sports, games, music, drama and all the varied activities entering into the program. The recreation executive also has the task of interpreting to the public through addresses, conferences and play demonstrations the work which is being done.

The staff of the superintendent sometimes includes in some of the larger cities an assistant. There are in addition playground directors in charge of individual playgrounds, directors of recreation centers, where such facilities are a part of the system, play leaders and assistants on individual grounds, and in some cities supervisors of such activities such as athletics, music, drama, handcraft, folk dancing, story-telling, boys' work, girls' work and similar activities.

Other workers on the staff who are in some instances responsible to the superintendent of recreation, in others directly to the park superintendent, are swimming instructors, guards and others associated with swimming pools, golf professionals and attendants, and workers involved in the administration of other recreation facilities.

Civil Service.

In many states existing laws require that recreation workers shall be employed and hold their positions under civil service. While this plan has many advantages, it has its difficulties as well, and it should be possible to safeguard and strengthen it by closer coöperation to civil service authorities and recreation officials. It has been urged that a higher type of leadership might be brought about through the abolition of local resident requirements, giving the opportunity to secure workers from outside the city; through the placing of greater emphasis upon personality, character and educational requirements; through insistence on a probationary period of from three to six months, and the automatic cancelling of the waiting eligibility list for the new year; through adequate salary standards and through impartial selection of members making up the civil service commission.

Salaries.

There is a considerable variation in the salaries paid recreation workers. A compilation of salaries made by the P. R. A. A. in a limited number of cities shows the following facts:

Salaries of recreation executives.[1] In 76 cities with population of over 50,000, ten women receive salaries ranging from $2,700 to $4,400, three receiving $2,700, three $3,600; sixty-six men receive salaries ranging from $2,500 to $6,500, eleven receiving $3,000, twelve, $3,600, and ten, $4,200 to $5,000. In 58 cities with population of 5,000 to 50,000, sixteen women receive salaries ranging from $1,800 to $3,600, nine receiving from $2,400 to $3,000; forty-two men receive salaries ranging from $2,200 to $4,500, eighteen receiving $2,200 to $3,000, twenty, $3,000 to $4,000. These figures show that 97 cities of the 134 mentioned are paying salaries above $3,000. The salaries of greatest frequency are between $3,000 and $4,000. For other staff positions the salary range in the city study is as follows: Recreation supervisor, from $1,200 to $3,500; recreation director, from $100 a month to $2,500 a year. Play leader or recreation assistant, from $60 a month to $1,800 a year.

The following table shows the salaries paid in a few of the cities in which community recreation is under the administration of the Park Department:

SALARIES OF RECREATION WORKERS

Population	*Superintendent Recreation*	*Assistant Supervisor*	*Directors Centers*	*Play Leaders*	*Swimming Instructors*	*Life Guards*	*Bathhouse Attendants*	*Golf Instructors*	*Music Leaders*
Cities 150,000–200,000	(1) $150*	(2) $2,400 1,800 (1) 150* (1) 35†	(2) $ .50‡ (4) 85.00*	(16) $50-$75* (29) 40- 75* (45) 3.50§	(1) $135*	(6) $80-$125* (2) 35.00† (22) 4.00§	(24) $60-$200* (15) 20-25 †	(1) $160*	(1)$175*
Cities 200,000–400,000	(1) $3,744 (1) 3,000 (1) 3,600	(4) $2,200 (1) 2,500 (4) 200*	(4) $130.00* (7) .55-.75‡	(18) $91.20* (2) .55-.75‡ (113) .34-.40[1] (65) 3.50-5.25§	(8) $.43-.55‡	(6) $105* (7) .55‡ (10) 3.25§	(8) $75* $.40-.45‡ (29) 3.00-3.50§ (12) 2.80-5.00[2]	(2)150-166.60*	(1) $133*
Cities 700,000–800,000	(1) $2,700 (1) 5,000	(1) $2,200	(20)$1,320-1,500	(13) $1,900 (40) 65* (80) 50*	(7) $1,800 (38) 95*				

* Per month. † Per week. ‡ Per hour. § Per day. [1] Athletic Directors. [2] Boat Attendants.

Training of Workers.

Even when workers of experience are secured, it is important that a continuous process of education be kept up. In some instances it is not possible to secure thoroughly trained workers, and intensive training methods must be used. Frequently before the opening of the summer playground season, institutes a few days in duration are held. Very often such institutes are opened to volunteers to carry back to their own groups — churches,

[1] These figures include cities in which park departments are conducting recreation, but in many of them the workers are under the administration of other bodies.

schools and clubs — the games and activities which they have learned through the courses.

The following program for a general institute from a California city is typical of many which are being held:

First Day

9.00 A.M. Growth of play movement.
10.00 A.M. Play in the program of the modern school.
11.00 A.M. Simple singing and tag games.
1.30 P.M. Recreation in its relation to the municipality.
2.30 P.M. Ball tag games: center spry, call ball, teacher ball, ball stand, dodge ball, etc.
3.30 P.M. Coöperation with neighborhood agencies.
7.30 P.M. Social evening: dramatics, indoor games, general good time.

Second Day

9.00 A.M. Delinquency and spare time.
10.00 A.M. Bat ball, Philadelphia bat ball, long ball.
11.00 A.M. The playground and character education.
12.15 P.M. Luncheon: What the school principal expects of the playground and the playground director.
1.30 P.M. Athletics for all.
2.30 P.M. Net ball, volley ball.
3.30 P.M. Demonstration of track and pentathlon.

Third Day

9.00 A.M. Health contribution of the playground.
10.00 A.M. Hit pin baseball, kick ball, Indian club basket ball.
11.00 A.M. Playground first aid.
Accident prevention.
1.30 P.M. Organization of schedules and tournaments: round robin, perpetual, elimination.
2.30 P.M. Stunts and relays.
3.30 P.M. Supplies, equipment, marking of courts, etc.
7.30 P.M. Social evening: ice-breakers, dancing, general good time.

Fourth Day

9.00 A.M. Play day organization.
10.00 A.M. Speed ball, soccer for men, baseball for women.
11.00 A.M. The playground program.
12.15 P.M. Luncheon: What the superintendent of recreation expects of the playground and the director.
1.30 P.M. Playground ideals.
2.30 P.M. Punt back and pass ball for men, basket ball for women.
3.30 P.M. Utilization of boy and girl leaders; demonstration of pupil leadership.

Staff meetings. To the creation of the *esprit de corps* which is the backbone of the recreation department, staff meetings are vital. At these meetings, usually held once a week, problems, plans and programs are talked over, new ideas suggested, differences in departments ironed out and responsibility fixed. Even where there is a very limited staff of workers such conferences are available.

Reports. A carefully worked out detailed report should be submitted each month by every department head. This should be made up by various members of the staff and gone over at staff meetings. The reports should cover a full statement of the activities of the month. The report of the playground division, for example, would cover such activities as: Attendance on grounds; special types of activities; number participating; accidents; discipline; principal meetings attended; principal committees attended; principal interviews attended. Other notes or comments that would be of interest to the board of directors. After each league meet, track meet or play day, a summary of the results should be made, with suggestions attached for the better handling of the event another year.

Business Management.

General policies. Clerical work relative to the activities of the recreation division is usually handled through the general office of the Park Depart-

ment. Correspondence is generally taken care of in the same way, though a special stenographer may be assigned to the recreation division. Questions of budget needs of various kinds are also handled through the general office as is the routine of making purchases, securing supplies, making up the pay roll and matters relative to sick leaves and vacations.

Dues and charges for recreation facilities. While many of the facilities and activities of park departments are free, the great majority make a charge for certain recreation facilities for which a charge may justifiably be made to provide funds to maintain facilities properly. Among these revenue-producing activities and facilities are golf, bathhouses and swimming pools, dancing, boating, in some instances dramatic activities, and registration fees charged athletic teams and leagues. (A discussion of this question with tables showing dues and charges in a number of cities will be found in the Chapter on "Financing.")

Permits. Permits for the use of gymnasiums, baseball grounds, tennis courts, picnic grounds and other facilities are often handled in the office of the Park Department, though this is not always the case. The granting of permits is an important consideration. Policies in regard to their use should be unbreakable even by the superintendent himself. Special instructions telling how, when and where these permits are issued should be published and strictly adhered to. Applications should be taken in the order in which they are made at the office; only in this way can a department be fair to the people of the community.

The Department of Parks and Playgrounds in St. Paul uses the following form in granting permits for the use of certain of the facilities:

DEPARTMENT OF PARKS AND PLAYGROUNDS

CITY OF ST. PAUL

Official Permit for the use of:

Field No. .....for Baseball / Kitten Ball / Football / Hockey Rink / Soccer Ball at.....

For .....

Date.....192..... Time .....

Managers are held responsible for smoking or profane language by players or immediate spectators.

ERNEST W. JOHNSON,
Superintendent of Playgrounds.

The Department of Parks, Rochester, New York, issues the following permit for those wishing to use picnic grounds:

DEPARTMENT OF PARKS

Rochester, N. Y. 1925

Permission is given to.....

to have the use of..... grounds

at..... on.....

.....192....., from.....M.

.....

Commissioner of Parks.

Papers, or other rubbish, must be deposited in the boxes or baskets provided for the purpose and not thrown on the ground. Failure to comply with this rule will deprive you of the grounds again during the season.

Problems of maintenance. Repairs for apparatus, care of grounds and physical facilities are matters generally handled through the maintenance division of the Park Department. It is desirable, however, for the caretakers who mark the grounds for games and activities and who have charge of the layout and equipment of games and the inspection of apparatus to be directly responsible to the executive in charge of the recreation division.

Relation to the public. The recreation division, which is concerned with the human uses of parks, which ministers to the needs of the community in its free time, has a very definite responsibility in all its relations with the public. The way in which people are received at the office, the way their requests over the telephone are answered, in no small way reflects the general attitude of the department. The recreation division is an information and service bureau; it should be prepared to answer any requests regarding facilities and programs, ready to serve all community groups, to provide them with play space, to arrange programs, train leaders and help them in their activities. The recreation division, however broad its program and effective its staff, cannot conduct a community-wide recreation program by working alone. There are other municipal groups, such as a school board with its facilities and programs. There are private groups controlling properties and equipment. In many cities there is a recreation commission which can very often provide leadership which will vitalize public park property. It is only by the pooling of the resources of all these

groups and by coöperation which makes the service of the many the goal of effort that a maximum of benefit will result to the community from the activities of the Park Department.

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Note. A complete list of the publications of the P. R. A. A. may be secured on request.

[1] The bibliography suggested is by no means complete. Many more books might be listed. A complete bibliography on Recreation Movements is available in "Sources of Information on Play and Recreation," published by the Department of Recreation, Russell Sage Foundation, 130 East 22d Street, New York City.

CHAPTER XIV

PARK POLICING

In marked contrast to the evident interest of the majority of the people of the United States in securing, developing and using parks and other recreation areas, is the manifold abuse of these areas when once thrown open to use. Whether the majority of the users of recreation areas and equipment are guilty or whether the destruction of parks is due to an active minority, the facts are that unbelievable damage is done to parks — plantings, equipment — yearly, to say nothing of the constant watchfulness that must be maintained to prevent their use for offenses against persons and public morality. Consequently, at the very outset of the development of a park system, or even of an individual park, plans must be made for the guidance of the people in the use of the property to protect the people's property against themselves.

Park Rules and Regulations

Simultaneously, therefore, with the development of any park property or properties for public use, it is necessary to lay down certain rules and regulations governing their use. Of course not all of the necessary rules and regulations can be foreseen at once. The great body of these rules that are in force today in various park systems throughout the country have arisen out of the experience that has come from the use of the properties by the people. In order to avoid an excessive amount of restrictions it is better to begin with a few general rules, adding from time to time such rules as experience shows to be necessary.

The promulgation of rules and regulations for the governing of park properties is a function of the park governing authority. Practically all the state enabling acts and charter provisions for setting up park governing authorities specifically give to these authorities the power to make rules and regulations for the governing of the properties under their jurisdiction. In most instances the rules and regulations, after they have been drawn up and adopted by the park governing authority, must be enacted into ordinances by the general governing authority of the municipality. In independent park districts or in metropolitan park districts the park governing authorities are specifically empowered to enact their rules and regulations into the form of ordinances without the action of a superior governing authority.

All rules and regulations adopted by any park governing authority

must not be inconsistent with the Constitution and the laws of the United States, or the constitution and laws of the state, or the charter and ordinances of the local political subdivision in which the park governing authority operates. In addition to such rules and regulations as may be adopted by any park governing authority, the laws of the nation, of the state and local political subdivision operate within the properties under the jurisdiction of each park governing authority. For examples of park rules and regulations, see section at close of this chapter, entitled "Some Examples of Park Rules and Regulations."

Methods Used in Policing Parks

There are three general methods used in policing parks in the various park systems in municipalities and counties of the United States.

Using Park Employees.

The first method is that of clothing park employees with the authority of constables, policemen or sheriffs, requiring them, in addition to the performance of their regular duties, to enforce park rules and regulations. This is the method that is usually followed in villages, towns and small cities, and is not infrequently found in large cities, even though the parks are patroled by the regular municipal police. The employees so sworn in as officers wear no uniforms but are usually provided with a badge as the visible sign of their authority. In all communities having only a few park properties and not organized into a genuine system, this method of policing parks, together with such aid as the constable, policemen or sheriff may render from time to time, may be entirely satisfactory and adequate. With due care in the selection of the employees who are to exercise police authority, this method may be of great value even in well developed park systems having regularly uniformed police or guards. It is more or less wise to limit the police power of deputized park employees merely to enforcement of park rules and regulations.

Policing by Regular City Police.

The second method of policing parks is to place the policing under the regular city police. This method has widespread use at the present time. This no doubt came about partly as an economy measure, partly as a general tendency to consolidate like functions in the community, and partly because in so many instances the seasonal character of park policing made it impossible to keep a majority of park policemen on the force the year round. This method is almost universally practiced in all commission-governed cities, city manager-governed cities and is found even in such large cities as New York and Boston. It is the universal practice in villages,

towns and small cities to require the local police officer or officers to enforce state laws and city ordinances in park areas as in other territory under their jurisdiction. In large park systems this method is almost universally condemned by park executives. Some of the reasons for this are:

1. The assignment of officers is inadequate.

2. It is not an uncommon practice to assign old, worn-out or sick officers, or else new and untrained officers to this duty, with the inevitable result that park policing is inadequately and inefficiently done.

3. The training and experience of the ordinary policeman does not, as a general rule, fit him for the proper performance of park policing, a duty which is almost as much instructional in nature as is enforcing law.

4. Park executives, as a rule, do not feel that they have the executive controlling authority over city police as they would have if the police force were organized as an integral part of the park administrative organization. In some few cases this has been overcome by the city council or the police chief placing the patrolmen assigned to park duty directly under the control of the park executive so long as they are assigned to this duty.

5. Too often the constant shifting of the personnel of patrolmen assigned to park duty makes for inefficiency and renders impossible the gradual building up of a trained force.

On the whole this method of policing parks in large park systems is undesirable and should not be encouraged.

The Park Police Force.

The third method is that of having a regularly organized police force as a part of the administrative organization of the Park Department under the direct control of the park executive. With but very few exceptions park executives throughout the whole of the United States believe that this is the only way by which policing of parks can properly be done. Some of the reasons for their belief are:

1. There can be better administrative control over men selected and trained by the executive head of the department.

2. It is likely that a more adequate force in numbers can be secured, and certainly a more careful selection for this duty can be made.

3. Men selected and controlled by the department head can be trained specifically for the duty of policing parks, and the men themselves will not be confused by the control of two different authorities.

4. There is not likely to be such constant shifting of the personnel as is nearly always the case when regular city patrolmen are used.

Some of the difficulties encountered in any park department selecting, training and controlling its own police or guard force may be enumerated as follows:

1. Inadequate general finances for maintenance.

2. Necessity of sometimes having to pay lower salaries than the city police are paid, causing ultimate dissatisfaction among the men. Oftentimes there is no plan of benefits in case of injury or death or no plan of pensioning on retirement. This may make the service so unattractive as to fail to draw good men. In some of the best organized park police systems in this country both a system of benefits and of pensioning have been adopted.

3. The seasonal character of park activities renders it very difficult, if not almost impossible, to carry a full force the year round.

In spite of these, and possibly other difficulties not mentioned, it is highly desirable that every park department which can possibly arrange to do so have its own park police or guards. This suggestion is made not so much from the standpoint of the mere enforcement of rules and regulations or laws and ordinances as from the standpoint of the social leadership values involved in having a carefully selected and trained guard service. Next to the trained recreation activities staff a carefully selected and trained force of park guards might, without doubt, become the most important group in the entire department in the guidance and leadership of the people in the use of the properties and facilities. To realize this desirable possibility is hardly possible under any other method.

Selection of Park Guards

There are two general methods by which park guards are selected. The first method is direct appointment by the chief executive of the department subject to the authority of the park governing authority or a standing committee on park guards, in the case of a park board or commission. The second method is selection of guards from a certified civil service list. In the case of those few departments where the guards are provided by the regular police department but under the direct supervision of the chief executive of the department, after the detail is made up, the selection is made by the chief of police of the regular city department.

Some park executives and park governing authorities prefer the first of these two methods for the reasons that they feel better selections can be made by direct examinations and personal contacts with applicants, and that if a poor selection has been made the undesirable guard or guards can be readily discharged. Moreover, the guards must always look to the governing authority and the chief executive of the department for their tenure of service rather than rely upon the protection of some outside department of the municipal or county government, thus making for more unity in the Park Department as a whole. However, practically every one of these objections is in a measure met by the civil service regulations.

Civil service commissions and executives, as a rule, welcome the help of the chief executive, if he himself is qualified, in formulating the examination questions, and may actually ask his help in conducting the examinations or at least parts of them. Under an organized system of this kind the examination is likely to be more thorough than if the chief executive or a committee of the board made the selections directly. There is usually leeway provided in filling any particular position from the certified civil service list. Thus the first in the list can be passed for the second and the second for the third before an appointment is obligatory. The various plans for a probationary period of three to six months or a year, before appointment is made permanently, give opportunity for observation of whether the appointee has the necessary personal qualities to make a good guard or not. The personality factor cannot always be determined by first contacts, and herein is one of the chief weaknesses of the civil service system of appointments, but this is largely overcome by the institution of a probationary period.

On the whole, therefore, the selection of guards through civil service, providing there is close coöperation between the chief executive of the Park Department and the officers of the civil service commission, is a very good plan through which to select park guards. There seems to be no doubt of the preference that the guards themselves have for this system because it gives them a measure of security, when their appointment is made permanent, that they otherwise would not have. This security is more theoretical than based on fact, however, for the governing authority of a park and recreation department may easily abolish the guard service or parts of it at any time.

EXAMPLES OF CIVIL SERVICE EXAMINATIONS FOR PARK GUARDS

The Milwaukee City Service Commission announces an original examination for Park Policeman, Class S, Grade I.

Examination on the seventh floor, City Hall, Milwaukee, Wis. Persons reporting after examination has been started will not be admitted to the examination. Applications may be filed up to May 1, 1924. Physical and mental examination will be held later.

Salary. First year, $1,680; second, $1,740; third, $1,800; fourth and thereafter, $1,860. A deduction of 4¾ per cent of the salary is reserved for a pension, the same rate as other city police. Salary not subject to federal income tax.

Application. Application blanks may be obtained in the office of the commission, seventh floor, City Hall, and must be returned, properly filled out and executed, prior to date of examination. The notary's oath may be executed in the City Service office free of chargy. The registration card is not an application and persons who have filed registration cards in the City Service office must also file a formal application before the date of examination.

Duties. To patrol the parks and boulevards in a given district; to enforce laws, ordinances, rules and regulations; to guard park property, and to perform other police duties as directed.

Qualifications and Requirements

Citizenship. Applicants must be United States citizens. Naturalized citizens must show their papers when filing application.

Residence. Legal residence in the City of Milwaukee for a period of at least six months immediately preceding date of examination is required. Persons living in territory for which annexation petition has been filed may take the examination, but cannot be certified for appointment until such annexation to the city has been completed.

Special Qualifications. Minimum height, five feet, eight and one-half inches in bare feet; weight proportionate to height, minimum to be approximately the medium height-weight tables.

Age. Minimum age at time of appointment, twenty-eight years. Persons over twenty-seven years of age may take the examination, but may not be certified for appointment until they have reached the age of twenty-eight years. Persons who have reached or passed their fortieth birthday will not be eligible.

Medical. All applicants must have a medical examination, given by the commission's physician, prior to date of examination.

Special Credit. Persons desiring credit for war service (not to exceed five points) must present their discharge papers when filing application.

Subjects of Examination and Relative Weights of Subjects

Special Subject. Will consist of question and tests covering the duties, qualifications and requirements as described above. Weight, 30 per cent.

Inspection and Personal Fitness (oral). Weight, 25 per cent.

Physical. Will consist of tests of strength of legs, arms, back and abdominal muscles, and tests in running and jumping. Weight, 25 per cent.

Educational. Will consist of arithmetic, spelling, penmanship, English, etc. Weight, 10 per cent.

Training and Experience. Will be marked on applicant's statements as to education and training received and practical experience acquired by employment in the same or similar line of occupation. An average of at least 70 per cent in all subjects combined is required in order to pass. Weight, 10 per cent.

Special Subject (written portion). Weight, 30 per cent.

1. City Information. Answer the following as clearly and completely as possible: (*a*) Which park in Milwaukee has sunken gardens? (*b*) In which park is the zoo situated? (*c*) Where are the city golf links? (*d*) In which park is the flower conservatory? (*e*) Which street car line comes closest to the conservatory? (*f*) In which park is the tourist camp site? (*g*) Suppose you were on duty near the boathouse in Washington Park, not far from the Sherman Boulevard entrance. A visitor came to you and told you that he was a stranger in the city, and wanted to have a swim in Lake Michigan at one of the city bathing beaches. He had been directed to the wrong park, and he asks you what cars to take to reach a bathing beach on the lake. What directions would you give him? (Select any bathing beach on the lake that you wish. Give directions for going all the way.)

2. Interpretation Test. Will be given separately, and will consist of interpreting the terms of a law or ordinance, and answering certain questions thereon. (Copy of which will be furnished.)

3. Observation Test. Personal description. Will consist of observing a small child, assumed to be lost in the park, and after the child has left the room, writing an identifying description.

4. Memory Test. Auto license numbers. Will consist of exhibiting auto license plates to the candidates, the license numbers to be written down afterwards from memory.

5. Memory Test. Oral description of an accident.

Special Subject (Inspection and Personal Fitness, oral). Weight, 25 per cent.

Will consist of oral questions and inspection of personal fitness.

Educational. Weight, 10 per cent.

Arithmetic. Will be given on a separate sheet.

Verbal Orders. Will consist of orders and directions to be given orally, and to be subsequently written down by the candidates. Spelling, penmanship and accuracy of reproduction will be considered in rating.

Physical. Weight, 25 per cent.

Will consist of tests of physical strength and condition. To be given at the Young Men's Christian Association gymnasium.

1. Registration.
2. Locker assignment.
3. Tests: 1. Right grip; 2. Left grip; 3. Chest; 4. Back lift; 5. Leg lift; 6. High jump; 7. Chinning or weights; 8. Five-minute run; 9. Rising test; 10. Seventy-five-yard sprint.

Training and Experience. Weight, 10 per cent.

1. Give date of birth and age at last birthday.

2. How many years did you go to school? What was the highest class reached?

3. What has been your principal occupation? Are you working at it now? If so, for whom and where? If not, where were you so employed last; for how long and where?

4. Describe any experience you may have had in any of the following occupations: soldier, sailor, marine; policeman, deputy sheriff, constable, marshal, watchman, game warden, guard, custodian, usher, street-car conductor, ticket taker, or any other position where you had to handle, direct or restrain the public.

5. State whether you have ever supervised the work of others, or have acted as a scoutmaster or leader or teacher, either of young people or of adults.

6. State any other training or experience you have had which you think would qualify you for the position of policeman in parks.

Special Subject (Interpretation Test). Weight, 30 per cent.

EXAMINATION BASED ON MOTOR VEHICLE LAW

The following is an extract taken from the Motor Vehicle Law of Maryland. The competitors will read the extract carefully and then answer the questions by writing the answer to each question in the blank space provided, inserting the number of the paragraph where each answer is found. The competitors may refer to the extract as much as they desire in answering the questions.

Paragraph 1. No person shall operate a motor vehicle upon any highway of this state until he first shall have obtained a license for the purpose. The commissioner shall require an actual demonstration of the qualifications of the person applying for such license, and, in addition, may refuse to issue the same if, in his judgment, the esafty of the public would be jeopardized thereby, but said applicant shall have the right of appeal if license is refused, as provided elsewhere in this subtitle.

Paragraph 2. Any person desiring to receive a chauffeur's or motor vehicle operator's license shall first obtain an examination permit or an instruction license upon paying the sum of one dollar to the Commissioner of Motor Vehicles, which such instruction license shall entitle the person to whom it is issued to operate a motor vehicle only when accompanied by a regularly licensed operator, for a period of thirty days from the date of its issue, at which time it shall expire and become void. At or before the expiration of the thirty-day period, persons licensed to receive instructions and desiring to obtain an operator's or chauffeur's license must apply in person to the Commissioner of Motor Vehicles, or one of his deputies, at the Baltimore office of the said commissioner, or any of the places throughout the state which the commissioner may designate for the convenience of applicants. Upon surrendering the instruction license and undergoing a satisfactory examination as to his qualifications, such person shall be entitled to receive the license applied for upon the payment of the fees provided by Section 144 of this subtitle.

Paragraph 3. Applications for licenses shall be made upon blanks furnished by said commissioner, and said application blanks and said licenses shall be in such form and contain such provisions, not inconsistent with the subtitle, as said commissioner may determine. A number shall be assigned to each license and a proper record of all applications for licenses and of all licenses issued shall be kept by said commissioner at his office and shall be open to public inspection.

Paragraph 4. Each license shall state the name, age, postoffice address of the licensee and the number assigned to him, and shall entitle the licensee to operate any car of any make, unless otherwise specified thereon. Said license certificate shall at all times be carried by the licensee when he is operating a motor vehicle upon the highways of this State, and shall be subject to examination upon demand by any officer of the law; and said license shall have endorsed thereon in the proper handwriting of the licensee the name of said licensee, and when requested by proper officer, in the discharge of his duties under the law, said licensee shall write his name in the presence of the said officer, to the end that the identity of said licensee may be determined; provided that no operator of a motor vehicle shall be stopped by any officer of the law for the sole purpose of exhibiting his operator's license. No license badge shall be worn.

Paragraph 5. No person, whether resident or non-resident of the State, under sixteen years, shall operate a motor vehicle upon any road, highway, street, lane or other public way within the State of Maryland. No person under the age of sixteen years, whether resident or non-resident, shall operate, drive or direct any motorcycles, as aforesaid; provided that persons between the age of fourteen and sixteen years, in the discretion of the Commissioner of Motor Vehicles, may obtain licenses to operate bicycles with motor attachments.

Paragraph 6. It shall be unlawful to obtain or attempt to obtain license by misrepresentation, or to use or permit the use of a license by any person other than the one to whom it was issued, or to change the name of the licenses or the date or age or any other information appearing upon any license issued by the Commissioner of Motor Vehicles.

Paragraph 7. Any person violating any provision of this section, or any owner-operator, or person in charge of a motor vehicle who shall cause or permit the operation of such motor vehicle in violation of any provision of this section, shall be deemed guilty of a misdemeanor, and upon conviction, be subject to a fine of not less than ten dollars nor more than one hundred dollars for the first offense; provided that the minimum fine in the case of a person to whom an operator's license has been duly issued, but who through inadvertence has not the same with him at the time of his arrest, shall be one dollar instead of ten dollars as above provided.

Special Subject (Interpretation Test). Continued

Write answers directly on this sheet. Consult the copy of the law given you as much as necessary. Time will be considered in rating.

1. Is a demonstration required before an operator's license may be issued? Answer: ..... Answer found in Paragraph No. .....

2. How old must a person be before he may secure a license to operate an automobile? Answer: ..... Paragraph No. .....

3. What is the minimum fine for operating a motor vehicle without proper license? Answer: ..... Paragraph No. .....

4. Is it lawful for an operator to let another person

use his operator's license? Answer: ..... Paragraph No. .....

5. May a driver be stopped by a peace officer for the sole purpose of examining the operator's license? Answer: ..... Paragraph No. .....

6. Does an operator's license entitle its possessor to operate any make of car? Answer: ..... Paragraph No. .....

7. What is the first license that an unlicensed person must secure to become an operator of a motor vehicle? Answer: ..... Paragraph No. .....

8. May a person secure a chauffeur's license before first possessing an operator's license? Answer: ..... Paragraph No. .....

9. May a person to whom a license has been refused appeal his case? Answer: ..... Paragraph No. ....

10. Who carries the operator's license? Answer: ..... Paragraph No. .....

11. May a person under sixteen years of age operate an automobile in Maryland if he comes from another state and is properly licensed there? Answer: ..... Paragraph No. .....

12. What is the nature of the crime of which a person is guilty who operates a motor vehicle without a license? Answer: ..... Paragraph No. .....

13. Under what conditions may a license to operate a motor vehicle be refused an applicant? Answer: ..... Paragraph No. .....

14. By whom must a learner be accompanied when driving a motor vehicle? Answer: ..... Paragraph No. .....

15. If a person not connected with the commissioner's office asked to be shown the number of an operator's license, would he be allowed to do so? Answer: ..... Paragraph No. .....

16. Is it permissible for a person applying for a license to use an assumed name? Answer: ..... Paragraph No. .....

17. Is an operator permitted to write anything on his operator's license? Answer: ..... Paragraph No. .....

18. Who licenses persons to operate motor vehicles on the highways of Maryland? Answer: ..... Paragraph No. .....

19. What is the life of an instruction license? Answer: ..... Paragraph No. .....

20. If a person possesses an operator's license but leaves it at home and is arrested while out driving, what is the minimum fine? Answer: ..... Paragraph No. .....

Special Subject (Memory Test Answer Sheet). Weight, 30 per cent

The candidates will listen to a description of an automobile collision which will be given orally. The following questions will then be answered. (This sheet furnished after description has been read.)

1. Did the accident happen at night or in the day time?
2. Where did the accident occur? Give locality as exactly as possible.
3. On what date did the accident occur?
4. What makes of cars were in the accident?
5. How many persons were injured, and how?
6. Who was found guilty of causing the accident?
7. What punishment was inflicted on the guilty party?
8. How many people were in the car which was wrecked?
9. How fast was the driver who caused the accident going?
10. How much damage was done to the injured car?

RAPID ARITHMETIC TEST

Perform the following arithmetical operations, doing all work directly on the sheet. Proceed from left to right, completing the eight problems in the top row before beginning the second row; complete the second row before beginning the eight problems in the third row, etc. Start and stop exactly when signals are given. Both time and accuracy will be considered in rating, but accuracy will be given a heavier weight than speed.

Add	*Subtract*	*Multiply*	*Divide*	*Add*	*Subtract*	*Multiply*	*Divide*
346 157 269	901 443	376 9	7) 3262	407 119 773	755 385	779 6	5) 4985
265 349 888	814 787	477 7	8) 5512	397 69 246	811 591	878 3	7) 7021
589 778 966	223 189	126 8	9) 8739	119 127 195	401 137	787 7	8) 8064

Add	*Subtract*	*Multiply*	*Divide*	*Add*	*Subtract*	*Multiply*	*Divide*
632	455	709	7) 5103	788	319	257	9) 9036
239	216	6		66	209	9	
128				133			
896	745	505	8) 7736	123	861	888	7) 9107
949	689	8		46	373	8	
778				29			
479	859	768	6) 3996	543	555	999	9) 8082
379	462	7		264	156	9	
856				201			
715	567	777	6) 5316	627	391	405	6) 4194
439	278	7		126	108	6	
923				239			

Supplemental Sheet. Not Shown to Candidates

Special subject, Question 5. The following was read to candidates twice. They were then directed to answer the questions furnished on separate sheet. Questions were not disclosed to candidates until reading was finished. "On Saturday, May 17, 1924, at about 10 P.M., a Buick touring car and a Ford sedan collided on the driveway in Lake Park, near the northwestern corner entrance to the park. This is near the corner of Lake Drive and Kenwood Boulevard. The Buick was upset and damaged to the extent of $400. Two men were in it. One escaped injury. The other had his left arm broken. The driver of the Ford was arrested and was found guilty of causing the accident and was fined $100. It was testified by several witnesses that he was going more than thirty miles an hour."

Educational. Verbal orders test. The following was read twice, the candidates being required to reproduce the substance of it: "The Boy Scouts have been given permission to put up six tents in Washington Park and camp overnight, near Highland Boulevard entrance. You go there and make sure they are not doing any damage and see that there are not any other boys staying with them. Make sure that they are not putting up any more tents than six, and tell them that they must not dig any holes in the ground or break any branches of trees. After that, go over to the lake and see if the benches by the boathouse are in good condition. It has been reported that one or two of them have been found broken and need repairs. Keep on the lookout for a big Newfoundland dog without any collar or license tag. It has been reported that he has been seen wandering around the park."

EXAMPLES OF QUESTIONS USED IN AN EXAMINATION FOR PROMOTION OF SERGEANT OF POLICE, CLASS F, GRADE II, CIVIL SERVICE BOARD OF THE WEST CHICAGO PARK COMMISSIONERS, CHICAGO, ILLINOIS

Special Subject

1. Give a full and complete statement of what you understand to be the duties of a sergeant of police in the West Park System.

2. What do you consider to be the principal duties of a patrolman in the Police Department of the West Chicago Park Commissioners?

3. (*a*) Give the boundaries of the West Chicago Park District, starting at Diversey Boulevard and the north branch of the Chicago River, going south, then west, then north and back to the starting point. (*b*) Name and describe all the written records which you think each sergeant in the West Park Police Department should keep.

4. Give a full and complete description of the procedure that a park patrolman should follow upon the arrest of a person for the violation of an ordinance, from the time that he observes the violation until the case is disposed of by the court.

5. Upon what things would you base your judgment of the efficiency of a patrolman who was assigned to your division?

6. (*a*) If you were assigning patrolmen to various posts in the park system, what qualifications would you desire in a man to fit him for duty in a playground? (*b*) At a busy street-car crossing of a boulevard? (*c*) In a large park? (*d*) On a motorcycle?

7. (*a*) What are the "rules of the road" laid down in the ordinances of the West Park Commissioners? (*b*) Define the following: 1. Larceny; 2. Arson; 3. Burglary; 4. Bribery.

8. What is the number of the section of the West Park ordinances under which a prisoner should be "booked" for the following offenses: (*a*) Traffic teaming on a boulevard? (*b*) Disorderly conduct? (*c*) Exceeding the speed limit in an automobile? (*d*) Intoxication?

9. As a sergeant in charge of a division, how would

you handle the following cases: (*a*) A patrolman who is occasionally late for roll call? (*b*) A patrolman whose post is at Washington Boulevard and Halsted Street on "dog watch," who telephones to you at 2.00 P.M. to say that he is ill and cannot report for duty on that day? (*c*) A patrolman who reports for duty in an intoxicated condition? (*d*) A patrolman who complains to you that his post is too difficult for him and who asks you for an easier assignment?

10. What changes can you suggest in the methods, equipment or organization of the Police Department of the West Park System that would tend to improve the service?

Educational

Spelling. 1, 2 and 3. The examiner will read twenty words, repeating each twice in succession. Enough time will be allowed between each word to write it. When the list has been completed the entire twenty words will be repeated once.

English. (To be graded on form, composition, grammar and information contained.) 4, 5 and 6. Assume that an automobile carrying four passengers struck an island safety red light at Jackson and Ashland Boulevards last night, damaging the machine and lamp post and injuring certain of the occupants of the car. Assume further that you were on duty at the time and witnessed the accident. Write a report of about one hundred words to the captain of police, assuming all other particulars and stating in full what action you took in the matter. *Sign the name John Doe to this report.*

Arithmetic. Show all your calculations in full. Full credit will not be given for a correct answer unless all figures are shown.

7. (*a*) Subtract 347,892 from 4,782,321. (*b*) Copy and add the following amounts of money: $21.39, $242.59, $132.46, $1,762.00, $936.47, $1.39, $127.63, $92.86.

8. Multiply 2,037 by 846 and divide the product by 291.

9. If one and one-half per cent of the pay due each member of the Police Department is deducted for pension, what amount should be deducted in each of the following cases: (*a*) One patrolman, pay due $43? (*b*) One patrolman, pay due $45? (*c*) One sergeant, pay due $55? (*d*) One sergeant, pay due $67.50?

General Information

10. (*a*) What body has power to enact laws or ordinances governing the West Park System? (*b*) What body has power to enact laws or ordinances governing the City of Chicago? (*c*) What body has power to enact laws or ordinances governing the State of Illinois? (*d*) What body has power to enact laws or ordinances governing the United States of America?

Duties

1. Give a full and complete statement of what you understand to be the duties of a sergeant of police in the West Park System.

2. As a sergeant of police for the West Chicago Park Commissioners what are all the instructions you would give to a newly appointed patrolman when assigned to your division?

3. A citizen reports to you that his automobile disappeared from in front of the Garfield Park conservatory, where he had left it while going through the building. Explain fully what would be your course of action and state the steps you would take in order to recover the machine and apprehend the thief.

4. Write a complete statement of all the means which can be used by a patrol sergeant in order to determine whether or not the men under his supervision are performing their duties completely and efficiently.

5. Name all the circumstances under which it is not unlawful for a police officer to use force or violence on the person of another.

6. Name all the activities or occurrences in the parks or on the boulevards for which a permit must be obtained from the West Chicago Park Commissioners.

7. What action should be taken by a patrolman who finds an automobile in a park at night without any occupants and with no owner in sight?

8. (*a*) Locate the following: 1. Sheridan Park. 2. Dvorak Park. 3. Harrison Park. 4. Shedds Park. 5. Franklin Park.

(*b*) What boulevard route would you recommend to an automobile party that wished to go from Logan Square to the corner of Western Avenue Boulevard and 49th Street in the shortest possible time?

9. Assume that you are sergeant of the second division of the police department and that there is to be a public open air band concert in Garfield Park tonight. State fully all the police arrangements that should be made, all the special assignments necessary, and what instructions you would give the patrolman on duty at that time and place.

10. What is the number of the section of the West Park ordinances under which a prisoner should be "booked" for each of the following offenses: (*a*) Begging? (*b*) Intoxication? (*c*) Indecent exposure? (*d*) Injury to park property?

Duties

(Another Example of Questions on this Subject)

1. Define the duties of a sergeant of police of the West Park System.

2. What are the duties of a sergeant when a patrolman turns in an accident report?

3. How would you place your men and what instructions would you give them if you were assigned to take charge of a band concert in a large park on a summer evening with a detail of sixteen patrolmen?

4. What general instructions and advice would you give a newly appointed patrolman assigned to you for duty?

5. State all the circumstances under which you would

arrest the driver of an automobile who has been involved in a collision.

6. Describe the proper method of making an arrest.

7. (*a*) Describe in detail what action you would take if a patrolman brought a lost child to headquarters. (*b*) What would you do if a person suddenly taken ill in one of the parks was brought to headquarters?

8. What instructions and advice would you give a patrolman newly assigned to motorcycle duty?

9. Under what circumstances would you make an arrest for speeding and what method would you follow to make sure that the person had violated the speed laws?

10. (*a*) Name ten boulevards under the jurisdiction of the West Chicago Park Commissioners. (*b*) Name the small parks and playgrounds in the West Park system.

Medical and Physical Requirements for Examination for Sergeant of Police

Vision. Applicant must be able to read 20:40 with each eye and 20:30 combined (Snellen's test). Must pass a satisfactory color test with yarns.

Heart and Lungs. Heart must be normal. Any indication of disease of this organ or of blood vessels shall be cause for rejection. Lungs and all organs of respiration must be normal.

Hearing. Must be normal.

Brain and Nervous System. Must be normal beyond question. Evidence of disease of the brain or of spinal cord shall be sufficient at least to hold the case under advisement.

Serious Injury or Illness. Complete recovery must be shown and without appreciable effect on physical capacity or functions.

Physical Defects. Use of legs, arms, hands and feet must be complete, excepting that one joint missing from left hand shall not be cause for rejection, nor shall left hand ankylosis, that affects not more than one finger or thumb joint, be cause. Any physical characteristic that might interfere with good service or affect appearance, shall be cause for rejection.

Skin, Scalp. Any infectious or contagious disease, or pronounced evidence on any part of the body of any disease, shall be cause for rejection.

Physical Examination for Sergeant of Police

Description of Test:	*Result Mark*	*Weight*	*Product*
1. Volume of lungs	——	3	——
Maximum 320 cubic inches, 100%. ⅓ point off for each cubic inch less			
2. Strength of back	——	6	——
Maximum 300 kilos, 100%. ¼ point off for each kilo less.			
3. Strength of legs	——	6	——
Maximum 400 kilos, 100%. ⅕ point off for each kilo less.			
4. Strength of forearm (R plus L) R——)	——	6	——
Maximum 150 kilos, 100%. ½ point off for each kilo less L——)			
5. Strength of upper arm (flexors)	——	6	——
Maximum, chin 10 times, 100%. 5 points off for each time less.			
6. Strength of upper arm (extensors)	——	6	——
Maximum push-up, 10 times, 100%. 5 points off for each push-up less.			
7. High jump (agility) ——feet, ——inches	——	6	——
Maximum, 4 feet, 100%. 2 points off for each inch less.			
8. Abdominal muscles, pick-up	——	6	——
Maximum, 10 times, 100%. 10 points off for each pick-up less.			
9. Fence vault, agility	——	6	——
Maximum, 5 feet, 100%. 2 points off for each inch less.			
Total		50	——
General Average			——

Signature of Examiners

_____

_____

_____

Vaccination. Evidence must be shown of recent successful vaccination.

Teeth. There must be a proper number of natural teeth in good condition or repair, and these teeth must be in good apposition for bridge or crown work, provided, however, that applicants with defective teeth may be permitted to compete in the examination, and if they succeed in passing the competitive tests with an average standing of seventy per cent or over, their names withheld from the eligible register until after these defects have been corrected to the satisfaction of the superintendent of employment or of a medical examiner appointed by him.

Urine Analysis. Any finding indicating advanced disease will be cause for rejection.

Venereal. Evidence of having or having had syphilis, or of the presence of any other venereal disease, shall be cause for rejection.

Other Cause for Rejection. Hernia, piles, goitre, provided, however, that applicants with hernia or piles may be permitted to compete in examination, and if they succeed in passing the competitive tests with an average standing of seventy per cent or over, their names withheld from the eligible register until after these defects have been corrected to the satisfaction of the superintendent of employment or of a medical examiner appointed by him.

EXAMPLES OF QUESTIONS USED IN EXAMINATIONS FOR PATROLMAN, F-I-Z, CIVIL SERVICE BOARD OF THE WEST CHICAGO PARK COMMISSIONERS, CHICAGO, ILLINOIS

Special Subject. (Example No. 1)

1–3. Why do you wish to become a West Park patrolman and what qualifications do you possess which, in your opinion, fit you for the position?

4. Locate the following: (*a*) Insurance Exchange Building; (*b*) First National Bank Building; (*c*) Baltimore & Ohio Railway passenger station; (*d*) Chicago, Milwaukee & St. Paul Railway passenger station; (*e*) Chicago & Northwestern Railway passenger station; (*f*) La Salle Hotel; (*g*) Criminal Court Building; (*h*) Chicago Art Institute; (*i*) Auditorium Hotel; (*j*) City Hall.

5. Locate the following: (*a*) Garfield Park; (*b*) Douglas Park; (*c*) Humboldt Park; (*d*) Vernon Park; (*e*) Wicker Park.

6. Name and give the location of five city precinct police stations on the West Side.

7. Name and give the location of five hospitals on the West Side.

8. Name ten boulevards on the West Side.

9. Define the following terms: (*a*) felony; (*b*) misdemeanor; (*c*) alias.

10. Suppose you were on duty and a citizen came to you with a diamond pin which he said he had found. What information would you collect and what action would you take?

11. The police bulletin for a certain day contained a notice that an automobile, with state license No. 124,612, had been stolen. Suppose that while on duty you noticed an automobile with that license number and answering the description given, standing empty in front of a store on a boulevard. What would you do?

12. (*a*) What lights must be carried by an automobile after dark, according to the state law? (*b*) If you saw a collision between two motor cars on a boulevard at your post of duty, in which several persons were injured, what action would you take and what information would you gather to include in your report to your superior officer?

13. What action would you take and what information would you gather if, while on duty, you found the body of an apparently drowned woman lying on the edge of the pond in Humboldt Park?

14–15. Memory Test. A brief police report will be slowly read by the examiner twice in succession. The candidate will then be required to reproduce in writing the information it contains. No one will be allowed to take notes while it is being read.

Special Subject (Example No. 2)

1. What is a policeman?

2. Name four hospitals on the West Side and give locations of same.

3. What are the general duties of a policeman?

4. What are a policeman's duties when patrolling?

5. What is a policeman's duty in regard to lost children?

6. What action would you take and what information would you gather if, while on duty, you found the body of an apparently drowned woman lying on the edge of the pond in Garfield Park?

7. Name four of the largest parks on the West Side.

8. Give location of each of the four largest parks on the West Side.

9. What would you do in each of the following cases: (*a*) Street or electric lamps are not lighted on your beat? (*b*) A dangerous and sunken pavement in the street? (*c*) What action would you take in reference to an automobile accident?

10. When a policeman brings a prisoner to the station, what is his duty?

Special Subject (Example No. 3)

1. What are the names of the streets that are the dividing lines east and west and north and south in the City of Chicago?

2. What should be the conduct of an officer when making an arrest?

3. What facts would you obtain for an accident report?

4. What should a police officer's conduct be at all times to all persons?

5. What is the most important duty of a policeman?

6. What is the first thing a policeman should observe when assigned to a new post?

7. What is the duty of an officer when he finds lost children on boulevards or in parks?

8. If party or parties are about to start work or construct anything on boulevards under the jurisdiction of the West Chicago Park Commissioners, what are the duties of the police officer?

9. Under what circumstances may a policeman refuse to issue a summons for traffic violations and take the offender to station instead?

10. When is an officer justified in using his baton?

Experience

Do not write your name on this paper. All your statements will be verified by the Civil Service Board. Proof of any misstatements will be cause for the removal of your name from the register for appointment or for your discharge after appointment.

1. Write the date, month and year of your birth.

2. Name all the schools you have attended, including grammar schools, high schools, evening schools, correspondence schools or business colleges, or other educational institutions.

Give the length of time you attended each school, the courses of study you took and whether or not you graduated. If you only went to grammar school and did not graduate, mention the highest grade you completed.

3. Are you now employed? If so, give the name and address of your employer, the date you started with him, the salary you receive and the kind of work you do.

4. Give a list of your employers for the last ten years; how long you worked for each, the kind of work done and tell why you left each place. Do not include in this list your present employer.

Physical Examination for Patrolman

Description of Test:	*Result Mark*	*Weight*	*Product*
1. Volume of lungs	——	4	——
Maximum, 320 cubic inches, 100%. 1/3 point off for each cubic inch less.			
2. Strength of back	——	6	——
Maximum, 300 kilos, 100%. 1/3 point off for each kilo less.			
3. Strength of legs	——	6	——
Maximum, 500 kilos, 100%. 1/5 point off for each kilo less.			
4. Strength of forearm (R plus L) R——)	——	6	——
Maximum, 175 kilos, 100%. 1/2 point off for each kilo less L——)			
5. Strength of pectorals Push——)	——	4	——
Maximum, 100 kilos, 100%. 1 point off for each kilo less. Pull——)			
6. Strength of upper arm	——	6	——
Maximum, chin, 10 times, 100%. 10 points off for each time less.			
7. High jump, ——feet, ——inches	——	6	——
Maximum, 4 feet, 100%. 4 points off for each inch less.			
8. Abdominal muscles	——	6	——
Lifting 35-lb. dumb-bell from lying position, 100%. 2 points off for each pound less.			
9. Lifting dumb-bell from floor to full arm length over head with each arm R——)			
Maximum, 75 lbs., 100%. 2 points off for each pound less. L——)	——	6	——
Total		50	——
General Average			——

Signatures of Examiners

_____

_____

_____

Training and Experience (Patrolman Grade 3)

1. What is your age? Are you married or single?

2. What schools have you attended? State length of time spent in each and how far advanced you were when leaving.

3. State in detail the experience you have had as a policeman, guard, watchman, or any similar position where your duties consisted of guarding lives and property, and keeping order. Specify your employer, length of employment, and nature of work done by you.

4. State in detail all other positions held by you.

5. Have you served in any branch of the army or navy during the Spanish-American or World wars? If so, give date of your enlistment and honorable discharge, and state whether you have presented your discharge, at the office of this commission. If not, do so within the next two days to receive the additional credit of five per cent on this subject.

Example of Oral Examination of Park Policemen Grade 3

1. What do you think are your duties when assigned to police a park?

2. How would you direct traffic in a park if it became necessary to do so?

3. How would you handle a gang of young toughs who habitually congregated at a certain park to the annoyance of other people?

4. What would you do if (*a*) You found a stray horse in your park? (*b* A wrecked automobile? (*c*) Child picking flowers? (*d*) A parade?

Example of Written Examination of Park Policemen Grade 3

You, as a park policeman, have found a man who has apparently committed suicide: You are to assume all other details and write a report of this to the captain of the park policemen, giving him in detail all the circumstances in the case, together with your action. Do not sign your name. Use your identification number instead. This report will be graded as follows: Context, 70 per cent; form, 10 per cent; penmanship, 10 per cent; spelling, 10 per cent.

EXAMPLE OF CIVIL SERVICE EXAMINATION FOR PLAYGROUND POLICEMAN, PLAYGROUND RECREATION DEPARTMENT, OAKLAND, CALIFORNIA

Department. Playground, Recreation Department.

Duties of position. General watchman's duties at the city playgrounds.

Qualifications required. Knowledge of rules and regulations of the police and recreation departments, and ordinances affecting the city playgrounds.

Classification. Class H, Grade 2. Trained labor service, salary $1,020.

Examination weights. Special subject, 5; report, 1; experience, 3; penmanship, ½; arithmetic, ½.

1. Outline generally the duties of a playground policeman.

2. As park policeman, if you were in charge of a large playground, what system would you adopt that would enable you to keep a close watch on all parts of the grounds?

3. If a bad fire should occur in the field house of the playground, what would you do?

4. If you discovered that the supply house had been broken open, and that some of the supplies had been stolen, what would you do?

5. In policing the playground, what system of reporting would you adopt, so that the proper authorities would know that you were patrolling the same?

6. If you discovered a man committing a crime in the playground, how would you place him under arrest?

7. What police equipment should a park policeman carry with him at all times while on duty?

8. In what way could you coöperate with the police department in properly policing a large playground?

9. (*a*) What crime would you charge a person with who had stolen supplies from the playground, the value of which was $150? (*b*) If you caught a man in the act of breaking into the field house at night, with the intent to steal supplies, what crime would you charge him with?

10. (*a*) If you should arrest a man for begging money of the children at the playground, what charge would you place against him? (*b*) What is a felony?

Training of Park Guards

It is obvious that there should be a difference in the intensity and content of the training for the different ranks of officers in park guard service, but, in general, every park guard regardless of rank should be thoroughly trained in the following:

1. The essential difference between the work of a park guard and that of an ordinary city policeman and the attitude that a guard must have

toward his service and the general public that use the parks and other recreation areas in the system.

2. In a thorough knowledge of all park rules and regulations.

3. A general knowledge of all city ordinances and state laws which he is expected to enforce in the territory under his jurisdiction.

4. In what his duties are under any and all the varied circumstances that may arise in the course of his service.

5. In a knowledge of first aid.

6. In the making of reports and keeping of records.

7. In the preparation of evidence for presentation to a court.

8. In how to properly use and care for all equipment used in the guard service, and especially of the equipment which he personally uses.

Just as institutes or regular courses of instruction are organized and conducted for recreation workers so there should be organized and conducted a course of training for park guards. Both types of workers, in their different ways, are designed to aid and guide the public in the use of public recreation areas and facilities. Both in their different spheres of activity are equally important. But the training of park guards in most park systems has not been given the attention that its importance warrants. A few systems have conducted regularly organized instructional classes, including to a greater or less degree most of the subjects outlined above. One of the most interesting of these schools for park guards is that conducted by the police division of the West Chicago Park Department. The course covers a period of ten weeks, one series of lessons being given each week. These series of lessons are here presented verbatim as an example of what may be done in any city or county system where a regularly organized force of park guards is maintained.

SERIES OF LESSONS USED IN THE TRAINING OF THE WEST CHICAGO PARK POLICE

First Series of Questions and Answers

1. *Q.* What facts would you obtain for an accident report? *A.* Name and address, married or single, age, nationality, occupation, exact time and place, nature and extent of injury, where taken and by whom, name and address of witnesses, cause of accident, state if you witnessed accident and if arrest was made.

2. *Q.* (*a*) What is the most important duty of a policeman? (*b*) What are the general orders? *A.* (*a*) The prevention of crime. (*b*) Military manners, keeping constantly on the alert, observing everything that takes place within sight and hearing, and to arrest violators of state laws, investigate all cases of suspicious characters on my post, in case of fire if discovered by me to turn in alarm with all possible speed, to receive, transmit and obey all orders from my commanding officers, and to quit my post only in the performance of my duty, or when properly relieved.

3. *Q.* What are the rules regarding courtesy between members of the department? *A.* Subordinates to salute superiors; superiors to return salute. Subordinates to uncover when entering office of captain, or president, and stand at attention when captain enters squad room.

4. *Q.* Define the following: Arrest, crime, complaint and jury waiver. *A.* (*a*) Arrest, restraint of a person's liberty so that he or she may be produced in court. (*b*) Crime, an act in violation of a public law. (*c*) Complaint, affidavit charging person with crime. (*d*) Jury waiver, signing away right to be tried by jury.

5. *Q.* (*a*) What is the purpose of an inquest? (*b*) How many constitute a coroner's jury? *A.* (*a*) To find the cause of a sudden or violent death. (*b*) Six persons.

6. *Q.* What is the difference between petty and grand larceny? *A.* Amount taken: $15 and under, petty; over $15, grand; or when by picking pocket, regardless of amount stolen.

7. *Q.* What is required of an officer when a defendant in a branch court takes a jury trial? *A.* Take all papers to jury trial court; the defendant to jury trial court, if not out on bail, ascertain date on which case has been set for hearing; notify witnesses of the time, and be there at that time.

8. *Q.* (*a*) Define misdemeanor, (*b*) mittimus. *A.* (*a*) Misdemeanor, any crime less than a felony. (*b*) A written order from court committing a person to a place of imprisonment.

9. *Q.* Define crime against children. *A.* Taking or attempting to take indecent liberties with any child under the age of fifteen years, with an intent to arouse or gratify the lust or passions or sexual desire on such person or child.

10. *Q.* (*a*) What is the proper method of making out an arrest notification? (*b*) When would you give an arrest slip to an out-of-town automobilist? *A.* (*a*) Date, full name (printed), address, where to appear, date and time committed, state license and vehicle license, year of license, name of arresting officer, star number and division, sex, age, nativity, married or single, occupation, place of occurrence, and if for Section 91, if entering or crossing the boulevard. (*b*) Only when his business is in the city, and he can properly identify himself.

Second Series of Questions and Answers

1. *Q.* What should be the conduct of an officer when making an arrest? *A.* He shall do so in such a manner that the person arrested cannot accuse him of using coarse, profane or insolent language, or any improper conduct.

2. *Q.* What should his conduct be at all times to all persons? *A.* His conduct shall at all times be gentlemanly, courteous and obliging to all persons; whether on duty or not his conduct shall be above reproach, as becoming an officer and a gentleman.

3. *Q.* When a violator of an ordinance uses profane or insolent language to an officer making an arrest, is the officer justified in abusing or mistreating his prisoner? *A.* No, an officer in any such case should not abuse or mistreat his prisoner, but he should act with sufficient firmness to properly perform his duties, and make a written report to the captain of the conduct of the prisoner. The captain will pay particular attention to see that the prisoner when taken to court will be punished for his conduct.

4. *Q.* Define: (*a*) *Nolle prosequi* (*nol. pros.*). (*b*) Appeal. (*c*) Felony. *A.* (*a*) An entry made of record by which the prosecutor or plaintiff declares that he will prosecute no further. (*b*) Removal of a cause from a court of inferior to one of superior jurisdiction, for the purpose of obtaining a renewal or retrial. (*c*) An offense punishable with death or imprisonment in the penitentiary.

5. *Q.* If obliged to make an arrest on a city street for an offense committed on a city street, could you book him on a West Park ordinance? *A.* No, West Park ordinances only apply to the territory under the jurisdiction of the West Park Commissioners.

6. *Q.* What are your duties when your attention is called to an insane person? *A.* Good judgment should be used, especially in a public place. Take or send person to detention hospital, file or have filed an affidavit in County Court, secure or have secured commitment papers at trial with witnesses.

7. *Q.* What are your duties when you find a dead body? *A.* Whenever an officer finds a dead body under suspicious circumstances he should prevent its removal unless exposed or other important reasons, examine surroundings and conditions, note position of body relative to objects nearby, note presence or absence of weapons or other things which may cause death; (in poison case), preserve contents of jars, pots, kettles as well as all edibles found. Notify captain's office at once if possible, get names and addresses of all witnesses, arrest those suspected of or having knowledge of crime. Make careful and complete memorandum of all facts for report. If accident, take body to nearest undertaker or where friends or relatives may direct.

8. *Q.* What are your duties regarding property of prisoners? *A.* Have all property taken from prisoner and see that he gets receipt for same, except stolen property or concealed weapons.

9. *Q.* When violations frequently occur, what will the policeman patrolling such post be charged with, and what is this evidence of? *A.* He shall be charged with negligence, inefficiency or inability, of which this is evidence.

10. *Q.* What should patrolmen know regarding their posts and the location and condition of park and boulevard property? *A.* They shall be thoroughly informed relative to the condition of their posts, the location and condition of park and boulevard property.

Third Series of Questions and Answers

1. *Q.* What is meant by duress? *A.* Duress is the act of compelling or forcing persons to commit an act against their will.

2. *Q.* What is the first thing for you to observe when assigned to a new post? *A.* The location of the nearest fire and patrol box, and public telephone.

3. *Q.* Define mayhem. *A.* Maliciously maiming or disfiguring the tongue, eye, ear, nose or lip of another or depriving him of the use of a limb or other member. Penalty, one to twenty years or fine not exceeding $1,000 and confinement in county jail one year.

4. *Q.* Define incest. *A.* The sexual intercourse of a man and woman related to each other in any of the degrees of relationship in which marriage is prohibited by law. Penalty: if father with daughter, not exceeding twenty years; others not exceeding ten years.

5. *Q.* What is a dying declaration? *A.* A dying declaration is a statement made by a dying person who

is under the fixed belief that he is about to die, and is without a hope of recovery concerning an injury inflicted upon him, of which injury he afterwards dies, indicating the person or persons guilty thereof.

6. *Q.* Should a dying declaration be in writing? *A.* Whenever possible it should be reduced to writing, signed by the person making it and duly witnessed. When there is neither time nor opportunity to reduce the statement to writing the words used are admissible if made while there is no hope of recovery, and if the person receiving it cannot remember the exact language used he should state the substance, but it must be sufficiently clear and definite to indicate precisely the meaning of the person making the statement, as long as the meaning of the person making it is clear, and he is without hope of recovery it is admissible.

7. *Q.* (*a*) Should a person making a dying declaration be sworn? (*b*) In what form should it be made? *A.* (*a*) No. A person making a dying statement should not be sworn. (*b*) I, John Doe, believing that I am about to die and having absolutely no hope of recovery, do hereby solemnly declare that William Smith did on or about the first day of February, 1922, in the City of Chicago, Cook County, State of Illinois (here give details of injuries inflicted or if person state as fully as possible). I hereby declare that the above statement is the whole truth, and nothing but the truth, and that it is made by me under the fixed belief that I am about to die, and look to death as inevitable, and at hand.

JOHN DOE.

Witnesses: Frank Green
Thomas Smith
Chicago, February 1, 1922

8. *Q.* What is the principal thing an officer should bear in mind when taking a dying declaration? *A.* The principal thing to be considered in taking a dying declaration in order to be admissible in evidence is, that the person must have no hope of recovery.

9. *Q.* What is the duty of an officer when he finds lost children on boulevards or in parks? *A.* He shall make inquiry in the immediate neighborhood and endeavor to ascertain the residence of the parent or guardian of said child; failing to do so he shall have the child brought to the nearest police station, and make out a full and complete report.

10. *Q.* If you should find a person who was taken suddenly ill, or a person who has met with an accident, what would be your duty? *A.* To ascertain all facts in the case, call an ambulance if necessary, obtain the names and addresses of witnesses, and while waiting for the ambulance to arrive take person to nearest drug store, or other convenient place, and call a doctor if necessary. If injuries were caused by some person with felonious intent, or through gross negligence, make every effort to arrest the offender, and secure the names and addresses of witnesses.

Fourth Series of Questions and Answers

1. *Q.* What is your duty when making an arrest of a mail driver, carrying United States mail, or a motorman for a violation for which a summons cannot be issued? *A.* Accompany such driver or person in charge to the post office or destination of the mail wagon within the city limits, and thence to police station. In case of a motorman, accompany him to the depot or barn before taking him to the police station.

2. *Q.* What is the proper manner of killing animals when officer finds it necessary to do so? *A.* In shooting an animal (if a dog), first securely tie the animal, place the muzzle of the pistol near the head, aiming a little to one side of the center of the top of the skull, and shoot downward, so that the bullet will go through the brain or toward the neck. Do not shoot too low or directly in the middle, because of the thickness of the skull at these points.

3. *Q.* What is your duty when making an arrest, when you take prisoner to city station (regarding information on arrest slip)? *A.* State what court defendant goes to. State whether station will make out papers or captain's office, what day and time case is set for, also district number of station and what section violated.

4. *Q.* When is an officer justified in making an arrest without a warrant? *A.* For a violation committed in the officer's presence, when the offender is found by a reputable citizen committing the offense, and such citizen will proceed with the officer to police station to sign complaint in regular form. Even though the police officer sees the offender committing the offense, the right to arrest without warrant does not exist except in case when the offense has been freshly committed or the offender is in flight.

5. *Q.* What are the principal faults of policemen in court, or when testifying before a jury and other courts? *A.* They do not sit erect in the chair; they do not speak in a tone of voice clear enough to be heard by jury or court; using slang (such as gat for gun, guy for man, etc.). All this tends to make a bad impression on court and jury. Leaning against benches, chewing gum or tobacco, or acting in sullen manner toward defendant also make a bad impression.

6. *Q.* What is the proper manner of stating your case in court, for example, violation of Section 91, E. P. O.? *A.* First address the court: Judge, your Honor, on January 9 at 8.10 P.M., the defendant, while operating an automobile south on Oakley Boulevard, failed to stop before crossing or entering on Jackson Boulevard, going about fifteen miles per hour (or whatever speed you judged he was going). In this manner you state your case clearly, and you have given all details. This routing should be followed in all cases.

7. *Q.* (*a*) Define *Alias.* (*b*) *Alibi. A.* (*a*) Otherwise known. An additional name to the real name of a person. (*b*) Elsewhere. A defense showing that ac-

cused was in another place when the crime was committed.

8. *Q.* Under what circumstances may a policeman refuse to issue a summons for traffic violation, and take offender to station instead? *A.* When the offender is guilty of disorderly conduct or cannot properly identify himself, or when he is guilty of a serious crime, such as seriously injuring some person through reckless driving or when intoxicated while driving or in charge of a vehicle.

9. *Q.* If party or parties are about to start work or construct anything on boulevards under the jurisdiction of the West Chicago Park Commissioners, what are the duties of the police officer? *A.* To see that they have the proper permit issued, and signed by secretary.

10. *Q.* If any person attempted to erect any building without such permit, what should the officer do? *A.* He should immediately prevent such persons from erecting any building without such permit or from continuing with such work.

Fifth Series of Questions and Answers

1. *Q.* In making an arrest of a licensed chauffeur, what information should you procure from him before giving him a summons? *A.* Name and address, state license, vehicle tax, married or single, age, nationality and chauffeur's license number.

2. *Q.* Why is it necessary to procure chauffeur's license number? *A.* Because in many cases two and three parties own and operate same vehicle, and when party to whom arrest-slip is given fails to appear in court warrant officer is handicapped in not having chauffeur's license number for which warrant is issued. This has happened several times. Warrant officer would be talking to the party wanted, and said party would say, "It is not I, it is my partner you want, and he is working nights," and arrests cannot be made on a warrant unless you are sure you have the party named on warrant. If the warrant officer had chauffeur's license number he could see by said number on party's badge if he was talking to right party.

3. *Q.* When is an officer justified in using force? *A.* When the occasion requires it he must act with energy and firmness, avoiding the use of revolver and baton except in extreme cases. Section 299, Chapter 45, Criminal Code: If an officer or private person attempt to take a person charged with treason, murder, rape, burglary, robbery, arson, perjury, forgery, counterfeiting or other felony, and he is resisted in the endeavor to take the person accused, and to prevent the escape of the accused by reason of such resistance he be killed, the officer or private person so killing shall be justified provided that such officer or private person, previous to such killing, shall have used all reasonable efforts to take the accused without success, and that from all probability there was no prospect of being able to prevent injury from such resistance, and the consequent escape of such accused person.

4. *Q.* If the occasion arises whereby an officer is compelled to shoot at a fleeing person who has committed a felony, in what position should he take aim? *A.* Never shoot while running, halt and take aim; be sure no other person is between you and the fleeing felon, or in case you miss the felon that your shot does not strike some innocent person, always firing a couple of shots for warning before aiming at felon.

5. *Q.* An officer witnesses a misdemeanor on a certain date, but does not make an arrest. Several hours afterwards, however, he does arrest the guilty person without having a warrant. Is such an arrest permissible? *A.* If the officer deliberately neglected to make the arrest at the time he witnessed the misdemeanor he would not be justified in making the arrest. Arrest for misdemeanor must be made on view, or with a warrant, or on the immediate pursuit of a person, who has committed a misdemeanor in the officer's presence.

6. *Q.* Define evidence. *A.* All means by which any alleged matter of fact, the truth of which is submitted to investigation, is established or disapproved.

7. *Q.* (*a*) Give an illustration of direct evidence. (*b*) Give an illustration of circumstantial evidence. *A.* If John Smith is accused of killing a man, and you testify you saw him leave the house with blood on his hands and the body of the deceased is found in the house shortly afterwards, that is circumstantial evidence.

8. *Q.* Define rape. *A.* Rape is the carnal knowledge of a female forcibly and against her will. Every male person of the age of seventeen years and upward who shall have carnal knowledge of any female person under the age of sixteen years, and not his wife, either with or without her consent, shall be adjudged to be guilty of the crime of rape, provided that in case said parties shall be legally married to each other before conviction, any legal proceedings shall abate, and provided that every male person of the age of sixteen years and upward who shall have carnal knowledge of a female forcibly and against her will shall be guilty of the crime of rape.

9. *Q.* Is an officer permitted to ride upon vehicle upon the driveways of the parks or boulevards while on duty? *A.* No, he is not, except when so ordered or when it is absolutely necessary to properly perform his duties.

10. *Q.* Should an officer observe anything in parks or boulevards liable to be dangerous or a public inconvenience, should he have same removed? *A.* If it is impossible for him to remove same, he should report the matter promptly to the captain's office.

Sixth Series of Questions and Answers

1. *Q.* Name some useful rules for an officer to follow when making an arrest. *A.* Do not punish for crime; that is the function of the judiciary. If a prisoner calls

you vile names, make report to captain, also explain to the court. Do not abuse or strike prisoner. It is unlawful and cowardly to strike a prisoner unnecessarily. It is natural for a person arrested to be angry and excited. There is no reason for you to do same. Do not argue with a prisoner or his friend; be firm.

2. *Q.* What is a prostitute? *A.* A woman who permits her body to be used indiscriminately by men for hire.

3. *Q.* When would you make an arrest of a prostitute for soliciting in the parks or boulevards? *A.* If you knew her to be ever convicted of prostitution, and she solicits more than one man, or if you saw her stop more than one man, or overheard her solicit any male person.

4. *Q.* Define homicide. *A.* The killing of one human being by an act of procurement or omission of another.

5. *Q.* What is the meaning of (*a*) The act? (*b*) Procurement? (*c*) Omission? *A.* (*a*) The act, to shoot, stab, etc., another and cause death. (*b*) Procurement, to have another kill a person. (*c*) Omission, to fail to provide ordinary preventatives, such as a contractor failing to provide ordinary proper planking of a building in course of construction, and as a result a workman falls and is killed.

6. *Q.* In how many classes is homicide divided? *A.* Four: murder, manslaughter, justifiable and excusable homicide.

7. *Q.* Define the following: (*a*) Murder. (*b*) Manslaughter. (*c*) Justifiable homicide. (*d*) Excusable homicide. *A.* (*a*) The unlawful killing of human beings in the peace of the people with malice aforethought, either expressed or implied. (*b*) Unlawfully killing a human being without malice expressed or implied, and without any deliberation whatever— it must be voluntary upon a sudden heat of passion or involuntary in the commission of circumspection. (*c*) The killing of a human being in necessary self-defense or in defense of his habitation or property from one evidently intending to commit a felony. The killing of a human being by an officer resisted and assaulted while in the execution of his office in a criminal case. The killing in unavoidable necessity without any will or desire and without inadvertence or negligence. The execution of a criminal by an officer of the law under order of court. (*d*) When a person doing lawful act without any intentions of killing, yet unfortunately kills another.

8. *Q.* What are the principal things to bear in mind when your attention is called to a murder case? *A.* To arrest the perpetrator, to get evidence, and to get witnesses. Do not talk unnecessarily; listen to what bystanders have to say. If you are suspicious of any person, do not let him know it by your actions unless you are going to make an arrest. Do not let the person or his friends under suspicion or arrest know what you know. Try to find out what they know. Do not get excited; be composed. Use your brain; be imaginative. Ask yourself how was this crime committed? Was there a motive, and what was the motive?

9. *Q.* What is the rule in regard to wearing or purchasing secondhand uniforms? *A.* No member of the force will be permitted to purchase or wear any police garments of another member or ex-member of the force without the special permission of the president.

10. *Q.* What is required when you change your residence? *A.* Report the change in writing to your sergeant, who will in turn report same to captain's office.

Seventh Series of Questions and Answers

1. *Q.* When an officer is obliged to make an arrest of an out-of-town driver for a traffic violation, said violation occurring before Speeders Court is in session on that date, what is the proper method of handling such cases when the violator is not out on bail, and he is willing to go to trial as soon as possible? *A.* All persons arrested and held in confinement must be taken to trial as soon as possible in the above-mentioned case; if violation occurred before 8 A.M., prisoner and papers should be taken to Speeders Court at 9.30 A.M. On date of arrest, if violation occurred too late for morning session, it would be proper to have prisoners and papers at afternoon session at 1.30 P.M. For traffic violations, if violator requested a later date, it would be all right to grant request.

2. *Q.* When an officer finds an automobile on his post that looks to him to be an abandoned (stolen) car, what information should be received before having same removed? *A.* Call the captain's office, get the name and address of owner, notify owner or have captain's office notify him where his car is, and that same must be removed within two hours. If car is not removed within specified time, have it removed to garage, and make a full and complete report to the captain.

3. *Q.* When an officer issues an arrest summons to a driver of a horse-drawn vehicle, what should he pay particular attention to regarding arrest slip? *A.* He should pay particular attention to mark on arrest notification the vehicle license number, and state plainly if it is horse or two horse license, because the same number is issued to different parties (such as 1246-22 one horse, 1246-22 two horse), and therefore when the defendant fails to appear in court, and wrong name is given, warrant officers find it difficult to locate right party.

4. *Q.* Define larceny. *A.* Larceny is the felonious stealing, taking and carrying, leading and riding or driving away the personal goods of another. Larceny shall embrace every theft which deprives another of his money or other personal property, or those means or muniments by which the right and title to property, real or personal, may be ascertained. Private stealing from the person of another, and from a house in the daytime shall be deemed larceny. Larceny may also be committed by feloniously taking and carrying away

any bond bill, note, receipt or other instrument of writing of value to the owner.

5. *Q.* Define robbery. *A.* Robbery is the felonious and violent taking of money, goods or other valuable things from the person of another by force or intimidation. Every person guilty of robbery shall be imprisoned in the penitentiary not less than one year, nor more than fourteen years, or if he is armed with a dangerous weapon with intent if resisted to kill or maim such person, or being so armed he wounds or strikes him or if he has any confederate present so armed to aid or abet him, he may be imprisoned for any term of years or for life.

6. *Q.* What is the difference between robbery and larceny? *A.* The difference is in robbery, force or fear must be used to obtain or rebail possession. Larceny must be by fraud, cheat, misrepresentation, trick or device.

7. *Q.* What is perjury? *A.* Every person having taken a lawful oath or made affirmation in any judicial proceeding or in any other matter whereby law and oath or affirmation is required, who shall swear or affirm willfully, corruptly and falsely in a matter material to the issue or point in question.

8. *Q.* State when it is possible to commit perjury and still swear to the truth. *A.* A person may be guilty of perjury, and still swear to a truth when he swears to something some other person has told him.

9. *Q.* What is required of officers regarding the conditions and cleanliness of police uniforms and apparel? *A.* All officers shall properly and cleanly dress while on duty.

10. *Q.* Are patrolmen allowed to walk together or talk to each other when patrolling their post? *A.* They are not, unless it be pertaining to police matters.

Eighth Series of Questions and Answers

1. *Q.* If you knew that a warrant was issued for John Smith for violation of Section 91, and while patrolling your post you met John Smith, would you be justified in placing him under arrest without having the warrant in your possession? *A.* No, as the offense was a misdemeanor the officer should have the warrant in his possession, but if the warrant was for a felony he would be justified in making the arrest.

2. *Q.* What are the principal duties of a police officer? *A.* The preservation of peace, enforcement of laws, the protection of life and property, and the prevention and detection of crime.

3. *Q.* When is an arrest necessary, when a driver of a vehicle runs into and seriously injures a pedestrian? *A.* If accident was caused by carelessness of the driver, such as running against an officer's signal, backing up without looking to see if way was clear, intoxication, speeding, reckless driving, no lights. If accident was caused through carelessness of pedestrian an arrest is not necessary, but it is proper to bring driver to station to properly identify himself, and guarantee his appearance at the coroner's inquest if injured party dies.

4. *Q.* What is an unlawful assembly? *A.* If two or more persons assemble for the purpose of disturbing the public peace, or committing any unlawful act, and do not disperse on being desired or commanded so to do by a judge, sheriff, coroner, constable or other public officer, the persons so offending shall be guilty of unlawful assembly.

5. *Q.* (*a*) What is a riot? (*b*) What is a rout? *A.* (*a*) If two or more persons do an unlawful act with force or violence against the person or property of another, with or without a common cause of quarrel, or even do a lawful act in a violent and tumultuous manner, the person so offending shall be deemed guilty of a riot. (*b*) If two or more persons shall meet to do an unlawful act upon a common cause of quarrel and make advances toward it, they shall be deemed guilty of a rout.

6. *Q.* What is a suppression? *A.* When twelve or more persons, any of them armed with clubs or dangerous weapons, or thirty or more armed or unarmed or unlawfully, riotously or tumultuously assembled in any city, village or town, it shall be the duty of each of the municipal officers, police officers, and sheriff of the county and his deputies to go among the persons so assembled or as near to them as they can safely go, and in the name of the State command them immediately and peacefully to disperse, and if they do not obey, such officer shall command the assistance of all persons present in arresting and securing the persons so unlawfully assembled, and every person refusing to disperse or to assist as aforesaid, shall be deemed one of such unlawful assembly.

7. *Q.* What is the limitation of time for commencing prosecution in felony charges? *A.* For murder and manslaughter, arson and forgery, any time after the commission of the crime; for other felonies, within three years after the commission of the crime.

8. *Q.* What is the limitation of time for commencing prosecution for misdemeanor? *A.* All prosecutions by indictment or otherwise for misdemeanor, or for any fine or forfeiture, under any penal statute, shall be commenced within one year and six months from the time of committing the offense, or incurring the fine or forfeiture.

9. *Q.* What is required of members of the police department in uniform while riding in street cars or elevated railway? *A.* No member of the department in uniform while riding in street cars or elevated trains shall occupy a seat in such car or train while any other person is obliged to stand because of lack of seats.

10. *Q.* Are members of the department allowed to engage in any other business or employment? *A.* No; each and every member of the department shall devote his whole time and attention to the business of the department, and shall not engage in any other business.

Ninth Series of Questions and Answers

1. *Q.* John Doe was driving an automobile truck west on Jackson Boulevard, and in the truck he had his wife and two children. Officer Jones gave John Doe an arrest notification for violating Section 2, West Park ordinance. Was the officer justified? *A.* No. The boulevards are for the use of pleasure vehicles. John Doe had a right to drive on the boulevard, inasmuch as he was using his truck for a pleasure vehicle.

2. *Q.* What constitutes an offense? *A.* A criminal offense consists in a violation of a public law in the commission of which there shall be a union or joint operation of act and intention or criminal negligence.

3. *Q.* What do you mean by intention? *A.* Intention is shown by the circumstances connected with the perpetration of the offense, and the sound mind and discretion of the person accused.

4. *Q.* Is drunkenness an excuse for committing crime? *A.* Drunkenness shall not be an excuse for any crime or misdemeanor unless such drunkenness be occasioned by the fraud, contrivance or force of some other person for the purpose of causing said drunkenness for such malignant purpose. Such other person shall be considered principal and suffer the same punishment as would have been inflicted on the person committing the offense if he had been possessed of sound reason.

5. *Q.* What is a delinquent child? *A.* A delinquent child is any male who, while under the age of seventeen years, or any female who, while under the age of eighteen years, violates any law of this state, or is incorrigible or knowingly associates with thieves, vicious or immoral persons or without just cause, and without the consent of its parents, guardian or custodian, absents itself from its home or place of abode, or is growing up in idleness or crime or knowingly frequents a house of ill repute, or knowingly frequents any policy shop or place where any gambling device is operated, or frequents any saloon or dram shop where intoxicating liquors are sold, or patronizes or visits any public pool room or bucket shop, or wanders about the streets in the night time without being on any lawful business or occupation, or habitually uses vile, obscene, vulgar, profane or indecent language in any public place.

6. *Q.* What constitutes contributing to delinquency of children? *A.* Any person who shall knowingly or willfully cause, aid or encourage any male under the age of seventeen years or any female under the age of eighteen years to be or to become a delinquent child as defined in answer to Question 5, or who shall knowingly or willfully do acts which directly tend to render any such child so delinquent, and who, when able to do so, shall willfully neglect to do that which will directly tend to prevent such state of delinquency, shall be deemed guilty of contributing to the delinquency of children.

7. *Q.* Define crime against children. *A.* That any person of the age of seventeen years, and upwards, who shall take or attempt to take any immoral, improper or indecent liberties with any child of either sex under the age of fifteen years with the intent of arousing, appealing to or gratifying the lust or passion or sexual desires, either of such person or such child or of both, or who shall commit or attempt to commit any part or member thereof of such child, with the intent of arousing, appealing to or gratifying the lust or passions of sexual desires, either of such person or of such child or of both, or any such person who shall take any such child and entice, allure, or persuade any such child to any place whatever, for the purpose either of taking any such immoral, improper or indecent liberties with such child, with said intent or of committing any such lewd or lascivious act upon or with the body, or any part or member thereof of such child with said intent.

8. *Q.* Define seduction. *A.* That any person who shall seduce and obtain carnal knowledge of any unmarried female under the age of eighteen years of previous chaste character, but no conviction shall be had of said crime upon the testimony of the female, unsupported by other evidence, and provided the subsequent intermarriage of the parties shall be a bar to the prosecution of said offense.

9. *Q.* What is required of officers regarding punctuality and obedience to orders? *A.* Officers shall be punctual in attendance, prompt in obedience to orders, quiet and civil in the performance of their duties and they shall agreeably give their names and the number of their stars to any person who may request same.

10. *Q.* When is an officer justified in using his baton? *A.* He shall not use his baton except when necessary to subdue a resisting prisoner, or in the most urgent cases of self-defense.

Tenth Series of Questions and Answers

1. *Q.* What should an officer traveling in a park pay particular attention to? *A.* Particular attention should be paid to arrest every person who makes an indecent exposure of his person. A person waiting to make an indecent exposure of his person picks out a place where there are no men in sight; he generally sits on a bench near a girls' playground, or where women are likely to pass by. They act in a very nervous manner, they cannot sit still for any length of time, and are continually looking around them. They generally carry a newspaper, and pretend to be reading it, but in many cases use it to cover up their person in case some man or person they are afraid of passes by. When such persons are arrested on complaint, the officer should always have the person making the complaint sign the complaint, and when committed in the officer's view, he should endeavor to have the person for whom the indecent exposure was intended appear in court to help prosecute. A very good practice for an officer traveling in a park is to try, if possible, to memorize the description of every person he sees act in a suspicious man-

ner; afterwards if a complaint is made, and the description answers to someone he has seen on his post, it will make it easy to pick up such person.

2. *Q.* Define extortion. *A.* If any judge, justice of the peace, sheriff, coroner, constable, police officer, clerk or other officer, state, county, town or municipal executive, or ministerial, or judicial, shall willfully or corruptly receive or take any fee or reward to execute or do his duty as such officer, except such as is or shall be allowed by law, or if any such officer shall willfully or corruptly ask or demand as precedent to the performance of his duty as such officer any fee or reward except such as shall be allowed by law.

3. *Q.* When a serious accident has happened, such as a collision between two automobiles or other vehicles, causing some person or persons serious injuries, or a driver of an automobile seriously injuring some pedestrian, what would be the officer's duty regarding the testing of brakes of such automobiles? *A.* He should have the brakes on such automobile tested in the following manner: Have one person sit at the steering wheel, have three or four persons push automobile in motion, person in driver's seat apply foot brakes when car is in motion. If foot brake does not hold, apply emergency brake in same manner. Have two or more persons making such test appear at coroner's inquest, if injured person or persons die. If automobile is in such condition that test cannot be made in this manner, have mechanic in garage examine brakes. In such cases have mechanic appear at inquest.

4. *Q.* Define burglary. *A.* Whoever willfully, maliciously and forcibly breaks and enters, or willfully and maliciously without force (the doors and windows being open) enters into any dwelling house, kitchen, office, shop, storehouse, warehouse, malthouse, stilling house, or other building with intent to commit murder, robbery, rape, mayhem or other felony or larceny shall be deemed guilty of burglary, and be imprisoned in the penitentiary for a term not less than one year, nor more than twenty years, provided, however, that whoever willfully and maliciously and forcibly breaks and enters, or willfully and maliciously without force (the doors and windows being open) enters into any dwelling house in the night time with intent to commit murder, robbery, rape, mayhem or other felony or larceny, shall on conviction be imprisoned in the penitentiary for a term of not less than five years, nor more than twenty years, provided further, that if at the time of committing the offense mentioned in the proviso, such person shall be found with any deadly weapon, deadly drug or anæsthetic upon his person or in his possession, he shall on conviction be punished by imprisonment in the penitentiary for any term of years, not less than five years.

5. *Q.* Define abduction. *A.* Whoever entices or takes away any unmarried female of a chaste life and conversation from the parent's house, or wherever she may be found, for the purpose of prostitution or concubinage, and whoever aids and assists in such abduction for such purpose, shall be deemed guilty of abduction.

6. *Q.* Define abduction of child. *A.* Whoever willfully takes or decoys away any child under the age of twelve years with intent to detain or conceal such child from its parents, guardian or other person having the lawful charge of such child, provided this shall not apply to anyone who in good faith interferes to protect the child from abuse or cruel treatment.

7. *Q.* Define the following: (*a*) Assault. (*b*) Assault and battery. (*c*) Assault with an intent. (*d*) Assault with a deadly weapon. *A.* (*a*) An assault is an unlawful attempt coupled with a present ability to commit a violent injury on the person of another. (*b*) Assault and battery is the unlawful beating of another. (*c*) Assault with an intent to commit murder, rape, mayhem, robbery, larceny or other felony. (*d*) An assault with a deadly weapon, instrument or other thing, with an intent upon the person of another, a bodily injury, where no considerable provocation appears or where the circumstances of the assault show an abandoned and malignant part.

8. *Q.* Definitions of some words used in the ten series of questions and answers. *A.* Carnal knowledge: sexual connection. Chaste: pure. Concubinage: The act or practice of cohabiting in sexual commerce, without the authority of law or a legal marriage. Malignant: Evil in nature or tending to do great harm. Malice aforethought: Wicked purpose. Tumultuously: Violent commotion; disturbance. Incorrigible: Beyond reform. Inadvertence: Done without consideration. Intimidation: The use of violence or threats to influence the conduct of another. Muniments: That which supports or defends, as a deed or a record.

9. Penalties for crimes defined in the ten series of questions and answers. Petty larceny: Not exceeding one year in the House of Correction, and fine not exceeding $100. Grand larceny: Not less than one year or more than ten years in the penitentiary. Crime against children: Not less than one year, nor more than twenty years. Contributing to the delinquency of children: A fine of not more than $200 or one year in the county jail, or both. Mayhem: Not less than one year, nor more than twenty years or fined not exceeding $100 and confined in the county jail not exceeding one year. Incest: Father with daughter, not exceeding twenty years in penitentiary; of relatives, not exceeding ten years. Rape: In penitentiary for a term not less than one year and may extend to life. Murder: Shall suffer the punishment of death or imprisonment in the penitentiary for his natural life or for a term not less than fourteen years. Manslaughter: For natural life or for any number of years in penitentiary. Robbery: Not less than one year, nor more than fourteen years, or if he is armed with a dangerous weapon with intent if resisted to kill or maim such person, or being so armed

he wounds or strikes him, or if he has any confederate present so armed, to aid or abet him, he may be imprisoned for any term of years or for life. Perjury: Not less than one year nor more than fourteen years in the penitentiary. Every person who by willful and corrupt perjury or subordination of perjury shall procure the conviction and execution of any innocent person, shall be deemed and adjudged guilty of murder, and punished accordingly. Unlawful assembly: Not exceeding $200. Suppression: Not exceeding $500 and confined in county jail, not exceeding one year. Rout: Not exceeding $100 and confined in county jail not exceeding four months. Riot: Not exceeding $200 and confined in county jail not exceeding six months. Seduction: Not less than $100 nor more than $5,000 or imprisonment in county jail, not exceeding one year or both. Assault and battery: Not less than $3.00 nor more than $100. Assault with intent: Not less than one year nor more than fourteen years in the penitentiary. Assault with deadly weapon: Not exceeding $1,000 nor less than $25 or imprisonment in county jail, not exceeding one year, or both.

10. *Q.* What is a search warrant? *A.* A process authorizing the search of a designated place for a certain property described in said writ.

In addition to courses of lessons similar to the foregoing it is desirable that certain other courses of training be added. Among these are:

1. *First aid.* It is of fundamental importance that every officer or guard be thoroughly trained in the theory and practice of first aid under the direction of a competent physician or other person specially qualified to give such instruction. This knowledge may not only enable the officer or guard to contribute to the comfort of ill or injured patrons of the parks, but also be the means of saving life, for it is not always possible to get a physician just when wanted.

2. *Record keeping.* Detailed instruction should be given as to how to handle properly all the different forms used in the field and in the office. Instruction in office forms is not so important for the rank and file except in so far as the data on those forms are made up from data from the forms used by the rank and file.

3. *Pistol practice.* While it is not the intent to make use of firearms in park police or guard service except in very extreme cases, such occasions do not infrequently arise, especially in large parks, parkways and outlying reservations. A school in the care and handling of the pistol should be conducted until every officer or guard is reasonably proficient. Such a school, while training for emergencies, has the added advantage of providing an agreeable recreation.

4. *Physical exercises.* While park guards or police get a considerable degree of exercise, especially if performing their duty on foot, it is desirable that regular courses in certain types of physical activity be given, partly for use in the performance in their duty, partly for keeping in fine physical condition and partly for recreation.

A few words of advice to park police by Theodore Wirth, Superintendent Minneapolis Park Department, in thirty-ninth annual report of Board of Park Commissioners, pages 66, 67. "I cannot better express my idea of an efficient park police force than by quoting a few paragraphs from the park police regulations of another city, *viz.:* 'The work of a park policeman

is essentially different from that of a city patrolman. Violation of the park regulations is rarely of a criminal nature, or due to malicious conduct, but is usually owing to the heedlessness or thoughtlessness of people of good intentions. The chief work of the park policeman is, therefore, to warn, check, guide, inform and instruct park visitors, and not to arrest and punish, except for some willful and flagrant misdemeanor. He should never exhibit ill-temper, vexation or resentment by tone or voice, sharp words or overbearing manner. All necessary orders, directions or advice should be given with becoming courtesy. On all proper occasions care should be taken to point out the reasonableness of the rules violated. When information is asked about any park matter of interest to a visitor, he should be willing to instruct and guide, but should avoid engaging in prolonged conversation on general subjects. Neatness of dress, propriety in speech and demeanor, perfect sobriety, and obliging manners and courtesy towards every visitor to the parks are essential requisites for a satisfactory discharge of the duties of the park police. The park police are expected to render all possible aid and assistance in case of accidents, and particularly to protect ladies and children against every kind of annoyance, rudeness or insult from evilly disposed or disorderly persons. Arrests should be made only when either the officer himself or some respectable person at hand can testify to a malicious violation of the rules and regulations. No arrests should be made for more trifling violations when a quiet reminder or reprimand would suffice to prevent a repetition of the offense. Great indulgence is recommended toward children, but discreet, dignified, firm and decisive action should be the rule toward gangs of unruly boys. A police officer doing duty on parks must therefore be a man of good judgment, even temper, tact and more than average education and good manners. Possessing these qualities, he can, by exercising them, become a most efficient official, for he will act with leniency where unnecessary firmness is uncalled for, but will be firm in the enforcement of rules, where leniency would be misplaced and unjustified. In order to make the park police force of Minneapolis efficient, yet not oppressive, and useful in every sense of the word, I want to recommend to the members of the force that you discharge your duties along the lines herein mentioned. It is my earnest desire to make the parks of Minneapolis useful and safe for the people, and toward that end and for that purpose I ask your combined and individual support.' "

Organization of the Park Police or Guard Force

The organization of the park guard or police force in the larger municipal and county park systems follows fairly closely the manner of organization of a municipal police force, that is, there is a captain or chief at the

head, one or more lieutenants (more often none of this grade), one or more sergeants and a rank and file of patrolmen or guards. In some instances the chief executive of the park and recreation system acts as chief with an assistant chief actively in charge of the force. In one instance it is noted that there is a different head of the park guards appointed each week by the chief executive of the department. In another instance the secretary of the board of park commissioners has direct charge of the park police, and in still another system a standing committee on police has general supervision of the police system.

The following examples of rules and regulations for the government of park police, or guards, in different cities and counties will serve to show the manner of organization and the duties and responsibilities of the different ranks and grades of officers in these systems:

RULES AND REGULATIONS FOR GOVERNMENT OF PARK POLICE, BOARD OF PARK COMMISSIONERS, MILWAUKEE, WISCONSIN

1. *Organization.* The park police force shall consist of one captain of police, and as many regular patrolmen as, in the opinion of the Board of Park Commissioners, may be deemed necessary to maintain a proper police service in the parks throughout the year, and also as many special officers as, in the opinion of the Park Commissioners, may be deemed necessary to assist the regular police force.

1. *Appointments.* All of the patrolmen now constituting the present force shall continue to serve under the provisions of their original appointment.

2. All new appointments shall be made subject to the rules of the city service commission.

1. *Duties. Captain of Park Police.* The captain of park police shall have full command and supervision of the park police force, including specials and watchmen, under the direction of the Board of Park Commissioners, and he will be held strictly accountable for the maintenance of a proper police service.

2. He shall make frequent visits to each of the parks and parkways at such hours of the day and night as may be necessary to determine that all officers are satisfactorily and fully performing the duties assigned to them.

3. He shall have full power and authority to assign officers to duty and to transfer them therefrom, and also to suspend them from duty on account of any failure to properly perform their duties, or on account of any offensive or ungentlemanly conduct on their part; and in case of such suspension of any such officers, the fact of such suspension and the reasons therefor shall be reported to the board.

4. He shall have authority to grant leave of absence to any patrolman; and no patrolman shall be absent from duty without his knowledge and consent.

5. He shall enter in a book kept for that purpose the names of all the patrolmen, and opposite to their names any dereliction of duty and the date and hour of the occurrence; which book shall at all times be accessible to the Park Commissioners or the secretary.

6. He shall also enter in a book kept for that purpose a full, correct and complete account of any accident, misdemeanor, crime or other happening in any of the parks; also a complete account of all arrests made, stating offense and disposition of case by the court.

7. An abstract from these two books shall be prepared by him on the first of every month and delivered to the secretary.

1. *Patrolmen.* Patrolmen are under direct control of the captain of police; all orders from the Board of Park Commissioners will be transmitted through said captain of police.

2. Each and every member of the park police force shall devote his whole time and attention to the preservation of order in the parks. He must do the utmost in his power to prevent the commission of any crimes about to be committed. Good order will be considered the best proof of the efficiency of the officer.

3. Punctual attendance, prompt obedience to orders and conformity to these rules will be required.

4. Each member must be civil and orderly in deportment, and must exercise patience and discretion in the discharge of his duty, acting with firmness and energy and using no violent, coarse or profane language.

5. Each member shall at all times and on all occasions when on duty display his star so that it can be distinctly seen.

6. Each member shall on all occasions when on duty wear such uniform as may be prescribed by the Park Commissioners, and appear neat in his person.

7. He shall give his name to all who may request it.

and give especial attention to the rules governing the parks.

8. Each member will be furnished with a copy of these rules in order to become familiar with his duty, and at the expiration of his term of service will at once surrender his star, buttons and other property belonging to the Park Commissioners, and return the same to the secretary.

9. Members of the police force will be liable to suspension and discharge from the force for either of the following reasons: (*a*) Smoking while on duty. (*b*) Entering any place where intoxicating drinks are sold while on duty (except in the discharge of duty). (*c*) Receiving or accepting rewards or gifts of any kind without the written permission of the Park Commissioners. (*d*) Neglect to wear his star and other emblems of office in a conspicuous position while on duty. (*e*) Leaving the park or being absent from duty without permission of the captain of police. (*f*) Neglect to treat all officers and other persons civilly and respectfully on all occasions. (*g*) Neglect to wear uniform while on duty according to regulations, or neglect to appear clean and tidy at all times. (*h*) Intoxication, disobedience, laziness or inattention to duty, lounging or sleeping while on duty, or any conduct unbecoming a police officer.

RULES AND REGULATIONS GOVERNING THE PARK GUARDS OF THE CITY OF WILMINGTON

1. The force shall consist of a captain, acting under the superintendent, and of such regular and special guards as shall be appointed.

2. *Duties of Captain.* The captain shall be responsible for the preservation of order in and the protection of all parts of the parks. He shall, with the approval of the superintendent, have power to assign officers to duty and to suspend any officer on account of failure to properly perform his duties. He shall make visits to the districts of all officers at such times of day or night as shall be practicable in order to see that they are satisfactorily performing the duties assigned to them. He shall make such investigations and attend to such other duties as the superintendent shall assign to him. He may in especially stormy or inclement weather modify the duties of any officer, provided it shall not be to the detriment of the service. He shall keep a book in which shall be entered all matters worthy of note therein, including: Rules and regulations of the Board of Park Commissioners and special orders of the superintendent. Accurate statements of all damages, accidents, offenses, arrests, or other occurrence of note, with full particulars of the time of occurrence, the name of officer making the arrest, the names and ages of offenders, witnesses, and other persons concerned, and the subsequent disposition of the case. A record of lost property or articles found or taken away from offenders, or which may otherwise come into the possession of any member of the force, and of its ultimate disposal. A record of all absences, whether with or without leave, and the reasons therefor. A record of cases of misconduct on the part of any guard or employee of the Park Commission and of their final disposal. He shall make report daily (except Sundays and holidays) to the superintendent of occurrences during the preceding day.

3. *Duties of Guards.* The principal duty of a park guard is by vigilance, careful attention and frequent patrol, to preserve order and prevent damage. Frequent occurrence of damage to property or disorder in any district will be regarded as evidence of neglect or lack of ability in the officer in charge unless satisfactory evidence to the contrary shall be shown. He shall do such other work in relation to the parks as the superintendent or the captain shall direct.

Each officer shall make himself acquainted with his district so that he can detect evidences of trespass or misdemeanor. He shall, as far as shall be consistent with his other duties, patrol his district, giving special attention to places where trespass or disorder is likely to occur. He must on all occasions be civil and respectful to other officers and to his superiors. When officers meet they must not stand long together, nor walk in company. In his bearing he must avoid all appearance of loitering or lounging, and must not seek shelter or ease by remaining in his guard box or other place except in severe or inclement weather, and in no case while there are many visitors in the park.

No officer while on duty shall smoke, or have possession of or drink any intoxicating liquor, nor have any sign of liquor about his person, nor while in uniform enter any place where liquor is sold except in the line of duty. Proof of intoxication in any degree will be deemed sufficient cause for suspension or dismissal from the force.

Except when his duties shall make it undesirable he shall wear the prescribed uniform, and shall keep it in a neat and clean condition. He shall wear his shield conspicuously displayed on his left breast. He shall carry on his person a club, but shall not use it except in self-defense or when necessary to make an arrest for a serious crime.

In making an arrest the officer should use only such force as is necessary to overcome resistance and to convey the offender to the police station. He must not make an arrest for a trivial offense when it is probable that a reprimand would be likely to prevent a repetition of the offense. He shall see that the park rules are observed.

When an officer has evidence of crime or misdemeanor or of a violation of a city ordinance being committed in his district he has the same responsibility

and authority as an officer of the city police. He must be polite and courteous to visitors and ready to answer questions and give directions and information, but should not engage in protracted conversation on general subjects. He must be kind toward children, but firm and decisive in dealing with unruly persons. He must be especially watchful to protect women and children from annoyance, insult or rudeness. He must be careful not to be overofficious or meddlesome, and should avoid exhibiting ill temper or vexation by tone of voice or overbearing manner. He should when necessary explain the park rules and regulations. In cases of accident or emergency he shall suspend all other duty and promptly render all possible assistance.

He shall give persons of suspicious or bad character such attention as will make it apparent to them that they are under observation. In case any person acts in a suspicious or offensive manner he shall be told to move on or to leave the park. He shall remove anything likely to be offensive or dangerous, and shall keep all inlets free from litter, leaves or other obstruction. He shall remove snow or ice from paths and steps, and see that all public comfort houses are kept in order, and do other work as directed by the superintendent. He shall promptly report damage to any part of the park, whether by trespass or by storm, and shall, if possible, make such temporary repairs as are necessary and shall place lights and guards in dangerous places.

He shall keep a book in which he shall enter particulars concerning arrests, damages, trespass, property lost and found, and other occurrences worthy of note, together with the names of the parties connected therewith and particulars and shall report the same to his superior officer at the earliest opportunity. No member of the force shall accept from any person, while such person is in his custody, or after such person shall have been discharged, or from any friend of such person, or from anyone under suspicion, any gratuity, reward, or gift, either directly or indirectly. No officer shall be a delegate or representative to or a member of any political convention, the purpose of which shall be the nomination of a candidate for a political office, nor shall any member of the force solicit or make a contribution for political purposes. No officer shall communicate any information which may enable persons to escape from arrest or punishment, nor communicate any information respecting any special orders that he may have received except with the permission of his superior officers, nor discuss the conduct of other members of the force with persons not connected with the park administration.

4. *Special Guards.* Special guards may be employed for special occasions by the superintendent, or in his absence by the captain.

5. *Hours of Duty.* The hours of daily or nightly duty may be regulated from time to time by the captain, according to the varying needs of the service throughout the year and the demands of special occasions. Sufficient time for meals will be allowed at such times as will best meet the needs of the service. No guard shall, during his hours of service, absent himself from his district, except in line of duty. While certain hours may be specified, it is understood that any officer may be called upon for additional service when necessary.

6. Each guard shall be entitled to leave of absence with pay, on a schedule to be arranged by the captain,[1] for one day in each of the months of July, August and September, two days in each month from October to April, inclusive, and to an annual vacation of seven days. The captain may grant leave of absence for a short time in an emergency, but if any guard desires to be away for a half day or more such time shall be deducted from his next month's leave of absence. Leave of absence may be allowed for a period of one month or for such period as the executive committee shall decide on account of sickness or injury due to unusual exposure or exertion in the line of duty.

In case of sickness of any officer the captain must be notified immediately.

RULES AND REGULATIONS CONCERNING THE ORGANIZATION AND GOVERNMENT OF THE PARK POLICE, BOARD OF PARK COMMISSIONERS OF THE EAST ST. LOUIS PARK DISTRICT, EAST ST. LOUIS, ILLINOIS

(Ordinance No. 53, East St. Louis Park District, pages 30–39)

Section 1. *Park Police Appointed by the Board.* There are hereby created the offices of the park police, which offices shall be filled as the needs of the service required by the president, with the advice and consent of the Park Commissioners, and shall hold their offices and positions during the pleasure of the president and Park Commissioners of the East St. Louis Park District of St. Clair County, Illinois, and not to exceed the term of one year without reappointment.

Section 2. *Police Officers to Take Oath.* Police officers before entering upon the performance of their duties shall take and subscribe an oath or affirmation to support the Constitution of the United States of America, and of the State of Illinois, and to well and truly perform all the duties of the office, and to obey and enforce the ordinances, rules and regulations of the East St. Louis Park District of St. Clair County, Illinois, to the best of their ability, and shall, before entering upon the performance of their duty, execute a bond with at least two good and sufficient sureties, to be approved by the president and commissioners payable to the East St. Louis Park District of St. Clair County, Illi-

[1]Changed to for four days in every month and to an annual vacation of seven days on December 11, 1917.

nois, in the penal sum of five hundred dollars, conditioned for the faithful performance of the duties of the office and to save said East St. Louis Park District harmless on account of any injury or damage to person or property through the negligence or wrongful act of said officer.

Section 3. *Secretary to Make Out Commission.* When any person appointed to the position of park policeman shall have qualified as aforesaid, the secretary of the East St. Louis Park District shall make out and deliver to said person a commission under the corporate seal, signed by the president and secretary of said East St. Louis Park District. The commission may be substantially in the following form: "To all whom these presents may come, greeting: Know ye that ..... having been duly appointed to the position of park policeman of the East St. Louis Park District of St. Clair County, Illinois, he is hereby commissioned as such with authority to execute all the duties thereof according to law, during the pleasure of the president and Park Commissioners of the East St. Louis Park District and not to exceed one year from this date."

Section 4. *Power of Police.* All members of the police department shall have power and it shall be their duty to arrest any person found in the act of violating any law of the state or ordinance of the East St. Louis Park District or aiding or abetting in such violation and shall take all persons so arrested before some court of competent jurisdiction in the East St. Louis Park District. In case no such court is in session the person so arrested may be detained in any police station in the said park district, or any safe place until such person so arrested can be brought before such court. In addition to this they shall be governed by the following:

Rules and Regulations

Rule I. Duties of Superintendent of Parks.

The superintendent of parks of the East St. Louis Park District, in addition to his other duties, shall have full and complete charge and control of the department of police, subject to such order as may from time to time be issued or enacted by the president and Park Commissioners of such East St. Louis Park District.

Rule II. Duties of Park Policemen.

Section 1. *Officers Always on Duty.* Every member of the park police shall devote his whole time and attention to his position, and is expressly prohibited from following any other business or calling.

Section 2. *Conduct of Park Policemen.* Every member of the park police shall be considered to be always on duty for the purpose of discipline, and his conduct at all times must be officer-like and above reproach.

Section 3. *Punctuality and Obedience.* Policemen must be punctual in attendance, prompt in obedience of orders, and quiet and civil in the performance of their duties, and must give their names and numbers to any one who may request the same.

Section 4. *General Behavior.* Every member of the police force is expected to use good judgment and discretion; yet, when necessity arises, must act with firmness and sufficient energy to properly perform his duty. He must at all times control his temper and refrain from the use of harsh, violent, coarse, profane or insolent language.

Section 5. *Duties of Officers.* Every member of the police force must have for his main object the prevention of crime and the enforcement of park ordinances within his jurisdiction, and he will exert himself to that end. He must examine and become familiar with every part of his post and always be alert to prevent the destruction or injury to trees, shrubs, plants, grass, turf or other property of the parks and boulevards.

Section 6. *Information.* Policemen will familiarize themselves with the laws and ordinances governing parks and boulevards, and be able at all times to furnish particular information relative to the condition of their posts and the location of park property.

Section 7. *Watchfulness.* Policemen must by their watchfulness render it difficult for any person to commit a crime on their posts. Where offenses frequently occur it is evidence of negligence or inability upon the part of the policeman having charge of such post. Absence of crime is the best proof of the efficiency of the officer.

Section 8. *Patrolling Beat.* Policemen shall carefully inspect every part of their posts regularly, but shall police matters demand their attention and presence at any particular place the regularity of inspection can be dispensed with, providing the policeman can satisfy the superintendent that there was sufficient cause for such action.

Section 9. *Failure to Patrol Beat.* Policemen must constantly patrol their posts unless otherwise ordered by the superintendent. Failure to do so will be considered sufficient cause for their discharge.

Section 10. *Leaving Beat.* Policemen must not leave their posts until regularly relieved, unless it be for the purpose of taking a prisoner to the station house or patrol box, or to answer a call for assistance by an officer or a citizen, or to make an arrest on view, or to follow an offender for the purpose of making an arrest.

Section 11. *Walking or Talking Together.* Policemen must not walk together or talk with each other or any other person while patrolling their posts, unless it is pertaining to police matters.

Section 12. *Using Batons.* Policemen must not use their batons or canes except in the most urgent cases of self-defense.

Section 13. *Reporting Lights Out of Order.* Policemen shall report promptly to the superintendent all electric, gas, or gasoline lamps that are not properly cleaned, or in any way out of order.

Section 14. *General Observation.* Should policemen observe in any driveway, lane, or other place anything

liable to be dangerous or a public inconvenience, or anything that appears to them irregular or offensive, they shall immediately remove same or cause same to be removed, and if impossible to accomplish this, report the matter promptly to the superintendent of parks.

Section 15. Policemen shall not while on duty read newspapers, books, or periodicals, and shall not ride in any vehicle upon the driveways of the parks and boulevards, except it be absolutely necessary in the discharge of their duty.

Section 16. Policemen in case of an accident shall render every assistance possible, being careful to take the names and addresses of all parties connected with the accident, and make a written report immediately of the same to the superintendent, and see that injured persons are properly cared for.

Section 17. Policemen shall keep their uniforms in as cleanly and tidy condition as possible. They shall be worn by the officers only while on duty. Officers shall not, because of their being police officers, seek to gain admission into places where they should otherwise have to pay an admission fee.

Section 18. Policemen who, by sickness, are rendered unable to report for duty, shall see that the superintendent is informed before reporting time.

General Rules

Section 1. *Familiarity with Rules.* Every member of the police force will be furnished with a copy of the general ordinances of the park district, which he shall keep in his possession and consult frequently, that he may become perfectly familiar with his duties.

Section 2. *Reports.* Every member of the police force is obliged to report to his superior officer all violations of the rules and regulations by other members of the force, and failure to do so will be deemed neglect of duty.

Section 3. *Complaint.* When complaints are made against members of the force by parties outside the force, they must be in writing, verified under oath, and be concise and specific as to time, place and circumstances.

Section 4. *Officers' Complaints.* When complaint is made by a member, or members of the force against one or more other members of the force, the complaining officer must reduce such complaint to writing, stating minutely the act or acts done or neglected to be done by the officer or officers accused, being particularly accurate as to time, place and circumstances.

Section 5. *Trial Board.* Complaints of any kind against members of the police force must be filed with the superintendent, and the park commissioners shall constitute a trial board to hear and pass judgment upon the accused.

Section 6. *Powers of Trial Board.* Such trial board, by a majority vote, shall be empowered to reprimand, suspend, fine or discharge any member of the police force who may be brought before them for any violation of the rules and regulations governing the police or for neglect to enforce any of the laws and ordinances of the East St. Louis Park District of St. Clair County, Illinois.

Section 7. *Notify the Accused.* The superintendent shall notify the accused officer or officers of the time and place of such hearing, and shall also notify the person or persons making complaint, and endeavor to have them present when such charge or charges are being heard.

Section 8. *Suspension.* Pending any investigation for infraction of the rules and regulations, any officer may be temporarily suspended by the superintendent.

Section 9. *Not Entitled to Salary.* No member of the police force shall be entitled to his salary during the period of such suspension unless it shall be clearly proven before the trial board that he is innocent of the charge preferred against him.

Section 10. *Property to be Returned to Board.* When a member of the police force resigns, or is discharged, or dies, it shall be the duty of the superintendent to see that his star and other property belonging to the East St. Louis Park District are promptly returned.

Section 11. *Breach of Rules and Regulations.* For any breach of the existing rules and regulations, or for any of the following named offenses, any member of the police force may be reprimanded, fined, suspended or discharged.

1. Neglect of duty.
2. Inattention to duty.
3. Sleeping while on duty.
4. Lounging on post.
5. Disobedience of orders.
6. Entering any place where intoxicating beverages are sold while on duty except in the performance of his duty.
7. Intoxication.
8. Drinking any kind of intoxicating liquors while on duty.
9. Smoking while on duty.
10. Willful maltreatment of a citizen.
11. Using coarse or insolent language to a superior officer, a fellow officer or any citizen.
12. Immoral conduct, or conduct unbecoming a police officer.
13. Disorderly conduct.
14. Any illegal offense.
15. Any act of insubordination or disrespect toward a fellow or superior officer.
16. Neglecting to treat all officers of the parks and members of the police force of said parks, and all other persons, civilly and courteously at all times.
17. Neglecting to wear uniforms while on duty according to regulation, or neglecting to wear star or other emblem of office in proper position and neglecting to appear clean and tidy at all times.

18. Neglecting to report any officer guilty of a violation of any rule, or regulation, or order issued, or in force for the government of the force.

19. Neglecting to take proper charge of all stray animals and other lost property found in or about the parks and driveways.

20. Receiving bribes in money or other valuable articles.

21. Neglecting to pay a just indebtedness within a reasonable time.

22. Communicating any information or orders received from a superior officer to any person without permission.

23. Interfering or meddling in civil matters, except to preserve the peace.

24. Leaving post while on duty without being relieved or being absent from duty without permission.

25. Inefficiency.

26. Interfering or talking with the laborers or workmen around the parks in any manner.

RULES AND REGULATIONS FOR THE GOVERNMENT OF THE PARK PATROL FORCE, WESTCHESTER COUNTY PARK COMMISSION, WESTCHESTER COUNTY, NEW YORK

1. Organization and Command

1. The territory covered by the operation of the Westchester County Park Patrol may, for police purposes, be divided into precincts.

2. The entire force shall be under the command of an officer who, for the purpose of exercising such command, shall be hereinafter designated as superintendent of the Westchester County Park Patrol.

3. The official location of the superintendent shall be as designated by the Westchester County Park Commission.

4. The assignment to precinct and command shall be made by the superintendent, subject to the approval of the commission.

5. In the absence or incapability of a precinct commander, a member of the force connected with the same precinct, who, with the approval of the superintendent, has previously been designated by the precinct commander, shall be in command. Any member of the force so placed in command shall assume all the responsibilities of the precinct commander, and shall perform all his duties, and shall be obeyed and respected accordingly.

2. Associations: Voluntary; Political

1. No benefit, voluntary or other organization of the Westchester County Park Patrol shall be permitted until the constitution and by-laws setting forth the object, purposes and scope of such organization have been submitted to and approved by the Westchester County Park Commission.

2. No member of the Westchester County Park Patrol, or any other person connected therewith, shall directly or indirectly solicit or be associated with any movement to solicit funds through subscriptions or contributions, public or otherwise, or pay assessments for political or any similar purposes.

3. Members of the force are expressly prohibited from empowering or making arrangements with any person not connected with the force to solicit public subscriptions or contributions for or on account of the Westchester County Park Patrol.

3. Superintendent

1. The superintendent shall have the following duties: He shall have cognizance and control of the entire operation of the force, and shall have such further powers as may be requisite to the performance of the duties imposed upon him as such commander.

2. He shall report fully and promptly to the Westchester County Park Commission as to all police matters.

3. He shall be accountable for all property and money belonging to the commission, issued to, or appropriated for the use of the force.

4. He shall make an accounting to the Westchester County Park Commission in writing for all such property and money in such a manner and at such times as may be directed by the commission.

5. He shall make recommendations to the commission regarding changes in salary.

6. He shall bring to the attention of the commission all cases affecting the discipline of the force, which, in his opinion, if substantiated, warrant action by the commission.

7. He shall approve all requisitions, bills, etc., before they can be forwarded to the commission.

8. All official reports, papers or documents of any kind or nature shall be forwarded to the commission as approved and signed by the superintendent.

9. All charges preferred against members of the force, before trial, shall be made by the captain, or approved by him and forwarded to the superintendent.

4. Captain

1. The captain shall report directly to the superintendent.

2. Whenever required to perform the duties of the superintendent, in his absence or disability, the captain will be particularly careful to carry out the orders of the designated superintendent previously given; and he shall not, except in cases of extreme emergency, countermand nor set aside any order of the superintendent; and when so countermanded or set aside, he shall report to the superintendent his reason for such action in each instance.

5. Patrol Sergeant

1. A sergeant on patrol is charged with exacting the proper performance of patrol and other police duty by the members of the force assigned to patrol duty within the territory subject to his supervision. He will assist and instruct the patrolmen in the discharge of their duties, and remain within said territory, unless required to leave it for a police or personal necessity.

6. Patrolmen

1. It is the duty of a patrolman both day and night, and at all times, to preserve the peace, prevent crimes, detect and arrest offenders and to enforce the law.

2. When on patrol duty, he must constantly patrol his post, must not stand, walk or converse with other patrolmen or citizens except on police business; must not lounge, sit or loiter when on patrol duty.

3. A patrolman shall not render any assistance in civil cases except to preserve the peace.

4. He is prohibited from recommending or suggesting to prisoners, or to the victims of accidents, the employment of any person or attorney, or any person representing an attorney.

5. A patrolman shall be civil, respectful to his officers, associates and citizens at all times.

6. It is a patrolman's duty to know all persons living or doing business on his post either by name or by sight; to note the time that all persons of known bad character frequent his post; to investigate all suspicious circumstances that suggest themselves to him, such as persons loitering about, carrying bundles or acting in an unusual manner.

7. A patrolman while on duty shall not enter any building, nor leave his post except in the discharge of police duty. If required by any person to leave his post in the discharge of such duty, he shall, except in great emergencies, first enter in his memorandum book the time and at whose request he leaves his post; he shall also enter the time of his returning to his post.

8. Upon his return to the patrol headquarters he shall report the fact that he has been off his post to the precinct commander, together with all details relating to the circumstances.

9. If a patrolman on post requires the aid of another patrolman he will give three blasts on his whistle. The patrolman signaled will answer with three blasts. The first patrolman will then give one blast to let his comrade know that he has heard the answering blasts. In case of extreme and immediate danger, when a whistle is not available, three revolver shots fired in the air in rapid succession should constitute a signal. The answering patrolman need not fire but one shot in the air and hurry to the point of danger.

10. It shall be considered neglect of duty for any patrolman to carelessly lose his shield, baton, revolver or any other part of his equipment.

11. When a patrolman observes anything of a dangerous character or likely to occasion public inconvenience or anything irregular or offensive, he shall report the same immediately.

12. He shall report the disposition of all cases wherein arrests have been made, upon his return from court.

13. Under no circumstances shall a patrolman turn a prisoner over to a brother officer. In all such cases he shall arraign the prisoner in court himself and give his evidence in person.

14. A patrolman shall promptly report to his precinct commander all accidents that may come under his observation, giving name, age, nationality, sex, residence, occupation, place of accident, filling out necessary forms, etc.

15. A patrolman shall report to his precinct commander all matters of importance relative to his duties, such as homicides, attempted suicides, burglaries, assaults, fires, disorderly acts and other violations of the law occurring on county property within his observation.

16. In order that the ends of justice may not be defeated through insufficient evidence, a patrolman must be particularly careful to note the declarations of all those who have been the witnesses of murderous assault.

17. In all cases of murder, all unauthorized persons shall be prevented from entering upon the scene of the crime.

18. Unless otherwise ordered, a patrolman during the last five minutes of his tour of duty, shall remain on post near the relieving point.

7. Precinct Commander

A precinct commander shall have the following duties:

1. He shall at all times have cognizance and control of police matters within the jurisdiction of this force which may occur within his precinct.

2. He shall be responsible for the efficiency and discipline of his command, and shall bring to the attention of the superintendent all matters pertaining thereto which may occur within his precinct.

3. He shall be accountable for all property and money belonging to the commission, issued to, or appropriated for, the use of his command coming into his custody.

4. He shall make frequent inspections at various hours, both day and night, of the territory allotted to his command, ascertaining the presence of each man at his proper place, and aiding in the enforcement of every duty.

5. He shall be responsible for the conformity to standard, the neatness and serviceableness and proper use and care of uniform and equipment worn by or issued to members of his command, and shall be required to make inspection thereof at least once a week.

6. He shall be responsible for the cleanliness, order and proper sanitation of the quarters occupied by his command.

7. He shall make such reports and keep such records as may be directed by the superintendent.

8. Headquarters

1. The following records shall be kept, *viz.:* Alphabetical force record; numerical shield and gun record; change force record; appointment record; expenditure record; complaint record; requisition record; dismissal record; grade record; filing bureau, etc. Also any additional record that may be deemed necessary.

2. All records and official papers kept in the office shall be secured by the clerk having charge of them so that they may not be tampered with or handled by unauthorized persons, or lost. Any information from the records to the public shall be given only on permission of superintendent or the captain.

9. Correspondence

1. All communications shall be addressed to the superintendent and in all official communications care shall be taken to use the proper title.

2. In all official reports, requests, etc., words appropriate to the subject shall be used, but similar in effect to the following: "I assume responsibility for the accuracy of the above report," or "I certify to the correctness of the above facts (or may be verification of facts) and assume responsibility for the accuracy of this report," or "I certify that the necessities of police work require the above," or "I certify that the records and characters of the men asked for are good."

10. Requisitions and Supplies

1. No supplies of any kind shall be purchased or repairs made, without the proper authority.

11. Patrol Property

1. Members of the patrol force and employees shall at all times exercise proper care in the use of county property, whether fixed or movable. Carelessness or roughness in the treatment of property will not be tolerated.

12. Property Lost, Stolen, Seized, etc.

1. A record shall be kept giving a description, with marks, numbers, etc., of all money, and property lost stolen, abandoned, or taken from prisoners or dead bodies, together with the name and number of the officer delivering the property.

2. No property shall be returned to a claimant without proper authority. In every case the receiver of the property so returned shall sign the property books in which the record is kept. This shall be construed as a receipt.

13. Automobiles

1. The automobiles or motorcycles of the patrol force must be handled with care. Under ordinary circumstances, the legal speed limit within the confines of the municipalities must not be exceeded.

2. Under no circumstances, except in case of arrest, shall women be permitted to ride in a police automobile; nor shall the machine be used for what is commonly called "joy riding"; nor shall it be loaned to a person or persons not connected with the Westchester County Park Patrol.

3. All vehicles found abandoned or seized for any reason by members of the force shall be taken to headquarters and properly cared for until delivered to owner or otherwise disposed of in compliance with law.

14. Telephones

1. Patrol telephones shall be used only for the transmission of official messages. Precinct commander will be held strictly responsible for the enforcement of the order. All reports or orders sent from or to precinct by wire shall be entered in a blotter kept for that purpose. Patrolmen are required to be concise, and respectful in answering all messages and inquiries, and give name, office and rank.

2. Patrolmen operating telephones are required to use extra caution in receiving or transmitting messages, so as to make no errors.

3. All messages not intended for the public shall be treated as confidential and no official messages shall be made a topic of conversation.

15. Appointments and Dismissals

1. Appointments to and dismissals from the force are made only by the superintendent, subject to approval by the commission.

2. Each officer upon being appointed shall receive from the commission a certificate, or notice of such appointment.

3. The permanent address given by each member of the force upon appointment will be construed to be correct unless each change thereof be promptly forwarded through official channels to the superintendent.

4. As soon as a newly appointed member of the force reports to his station of first assignment the precinct commander thereof shall immediately advise the superintendent in writing, of the date and time of such persons reporting for duty.

5. As affecting pay and allowances, appointments are effective upon the date of appointment.

16. Resignations

1. Resignations in writing shall be submitted, through official channels, to the superintendent. The date upon which it is intended they shall become effective must be specified in body of the communication.

2. Before a member of the force resigns he shall be

required to turn in all property issued or assigned to him by the commission. His precinct commander shall make endorsement on the resignation showing compliance with this rule, and until this is accomplished, all pay or compensation due such member shall be withheld.

17. Transfers

1. As the necessity of the service may require, the superintendent shall be empowered to transfer from one point to another all persons connected with the force.

2. Unless otherwise directed, an order to transfer becomes effective upon its receipt by the precinct commander under whose immediate command the number of the force that is to be transferred is serving; but when the member of the force affected is absent at the time of the receipt of the transfer order, it becomes effective upon his return to duty.

3. A member of the force who is transferred shall proceed without delay and in a direct route to his new station. Failure to comply with this rule will constitute absence without leave.

18. Leave of Absence

1. Leave of absence, in excess of three days, shall be granted only upon authority of the superintendent. No leave of absence in excess of civil service regulation will be granted except in exceptional circumstances.

2. Leave of absence on account of sickness, where the disability is unquestionably shown to have been incurred on account of the performance of official business, may be granted, with pay, but only upon the certificate of a physician stating the necessity for absence and nature of sickness. At the option of the Westchester County Park Commission the services of a physician may be employed to inquire into the nature of the disability of any member of the force applying for leave of absence on account of sickness, and the approval of leave may be made contingent upon the nature of the written report of such physician.

3. If on account of disability incurred in the line of duty, it is necessary for any member of the force to enter a hospital for treatment, no claim for expense will be allowed unless the hospital at which such treatment is to be received is designated by the superintendent or higher authority, prior to the admission of patient.

4. Extension of leave of absence can be granted only by the Westchester County Park Commission, for such period as may be designated.

5. Leave of absence will be granted in terms of days, each day of leave being taken to mean twenty-four hours of actual absence.

6. Leave of absence and off duty period are granted with the express understanding that they are terminable by precinct commander, or higher authority, should urgent necessity therefor arise.

7. Save in exceptional circumstances, which shall be fully explained, applications for leave of absence shall be submitted sufficiently in advance of the desired period of leave to allow complete action being had thereon.

8. The granting of vacations will be conditioned upon the best interests of the service, and will be in accordance with the terms of general orders pertaining thereto.

19. Tours of Duty

1. The personnel of each precinct available for patrol duty will be divided, as far as practicable, into reliefs. Assignments to reliefs shall be made by the precinct commander.

2. The mutual exchange of tours of patrol by members of the force is hereby prohibited, except by authority of the precinct commander.

3. No member of the force shall be required to perform additional tours of duty as a punishment.

20. Suspensions

1. A superintendent or captain shall suspend from duty any member of the force serving under him when, in his opinion, such action may be necessary for the preservation of good order and discipline in the command. In all such cases, report shall be promptly made to the force headquarters of park commission.

2. Unless otherwise directed by the park commission, a member of the department under suspension will report daily, in person, to his commanding officer at the office of his command, or, by permission of the superintendent or captain, to the commanding officer of his residence precinct.

3. Under suspension a member of the department will promptly surrender all department property, also his pistol or revolver, which property will be retained by his commanding officer and returned to him when relieved from suspension or restored to duty.

4. During the period of suspension a member of the force will not wear his uniform.

21. Discipline and Charges

1. Except as hereinafter noted, charges in writing shall be preferred against members of the force alleged to be guilty of infractions of these rules and regulations, or alleged to be guilty of conduct prejudicial to the good order and discipline of the force, or for absence without leave.

2. In each instance the charges will be prepared and submitted to the superintendent by the precinct commander in whose territory the alleged breach of discipline was committed.

3. A copy of the charges upon which a member of the force is to be given a hearing will be furnished to him by the superintendent or captain, at least twenty-four hours before such hearing. The services of charges must in each case be acknowledged in presence of a witness who will witness same.

4. In forwarding charges to the superintendent, a precinct commander shall inclose a statement to the effect that he has investigated the charges and believes they can or cannot be sustained. He shall also enclose any statements in the form of affidavits which may be obtainable covering material facts involved in the charges. If none are obtainable he shall so state. He shall also enclose a statement as to the general fitness of the members of the force against whom charges are preferred, which statement shall be based upon the record of such person as shown in the precinct blotter.

5. The captain is not required to bring every minor dereliction of duty to the attention of higher authority, but will endeavor to prevent their recurrence by admonitions, by withholding privileges, and by such other means as may be necessary to enforce their lawful orders.

6. All employees are expected to keep out of debt. Unexplained failure to pay bills for rent, clothes or other living expenses will be regarded as conduct prejudicial to the good order and discipline and will subject the offender to charges and trial.

22. Instructions

1. Precinct commanders shall frequently give such instructions as may be necessary to keep the members of their command thoroughly familiar with the following: The duty of a peace officer, the use of the revolver, and in the grips and methods of subduing prisoners with the employment of the least amount of force.

23. Uniform and Equipment

1. All members of the permanent force are required to supply themselves, at their own expense, with such uniform and equipment as may from time to time be prescribed by the commission.

2. All such uniform and equipment must conform in every respect to the standards adopted by the commission.

3. Members of the force shall be required to renew such articles of uniform and equipment as are unserviceable in the opinion of the superintendent or captain.

4. Members of the force shall wear their uniform at all times while on duty, unless specially directed by their captain in each instance to the contrary.

5. The shield will be worn by all members of the force while in uniform. It shall be worn above the left breast pocket or blouse or in a corresponding position on their overcoat or other outer garment.

6. No member of the force shall be permitted to alter or adjust equipment issued to him by the commission in such manner as to destroy its uniformity with the adopted standards.

7. Uniforms must be kept neat and clean, and equipment ready for immediate use.

24. General Provisions

1. Courtesy among members of the force and to the public is indispensable to discipline. Respect to superiors will not be confined to obedience on duty, but will be extended at all times.

2. Members of the force when in uniform shall salute their superior officers as hereinafter provided. It is the duty of a superior officer to return the salute.

3. The salute is made by raising the right hand smartly until the forefinger touches the lower part of head dress above the right eye, thumb and fingers extended and joined; palm to the left, forearm inclined at about forty-five degrees; hand and wrist straight. After the officer saluted has acknowledged it, or has passed, drop the arm quietly by the side. If uncovered, the forefinger touches the forehead above the eye. The right hand is used except when it is otherwise necessarily engaged. Men in ranks do not salute unless directed to do so.

4. Upon entering the office of the commission or superintendent, members of the force will salute by removing the hat.

5. Members of the force on patrol shall not engage in conversation in such manner as to defeat the purpose for which they are posted. They shall not smoke. They shall patrol their post in alert manner, observing, as far as possible, everything which takes place within sight or hearing.

6. Members of the force shall devote their whole time and attention to police work and are prohibited from following any other calling or being engaged in any other business.

7. Members of the force attending courts as witnesses will always appear in proper uniform, unless specially excused by the superintendent or captain.

8. The use of coarse, vulgar or profane language is prohibited.

9. Members of the force shall not loan money to or borrow money from, or otherwise become indebted to one another.

10. Members of the force shall not use any unnecessary violence or willfully maltreat any prisoner or other person. The baton or revolver must never be used except when absolutely necessary. The baton is usually sufficient to subdue the most belligerent person. The revolver should be drawn only in times of riot or when the officer is attacked by superior numbers, or by some person armed with a deadly weapon, or where he is trying to capture a fleeing prisoner who refused to stop when commanded to halt.

11. No member of the force shall wear, use, display or have in his possession any badge other than the one to which he is entitled.

12. Members of the force shall not apply for warrants for assault upon themselves without the permission of the superintendent or captain.

13. The playing of cards or any game of chance for

stakes or wagers is strictly prohibited in all department buildings.

14. When marching in a body, members of the force will do so in military order and refrain from talking in ranks.

15. Members of the force are prohibited from influencing or attempting to do so, by threat or otherwise, the business of any citizens.

16. No member of the force shall communicate to any person information that may enable persons to escape arrest or punishment or that may enable them to secrete stolen goods or otherwise conceal a crime. Nor shall he communicate any information respecting special orders that may be issued for the capture of a criminal.

17. No member of the force shall accept an award, reward or other emolument without the consent of the superintendent or captain.

18. No member of the force shall divulge information from the force records without the consent of the superintendent or captain. Should an officer be quoted in the public press as having done so, it shall be regarded as *prima facie* evidence that he has violated this rule.

19. Members of the force shall do no talking for publication nor be interviewed, nor shall they make any public speeches on police matters without the permission of the superintendent.

20. In all cases of homicide, violent, mysterious or unnatural death, the superintendent or captain, in whose precinct the body is found, shall immediately notify the medical examiner of the county and place an officer in charge of the body until medical examiner arrives. Under no circumstances must any unauthorized person or persons touch or disturb the body, destroy finger-print evidence, or remove any evidence of a crime. Should the medical examiner decide to perform an autopsy, the officer in the case shall remain as a witness and to identify the body. By officer in case is meant the officer who first discovered or saw the body. He simply has to identify the body cut open as the one he discovered, or first saw. Should the officer know the name of the deceased, so much the better. The force is responsible for any property found on the body of a deceased person; such property shall be properly marked or labeled for identification and delivered to headquarters, where it will be held until called for by person or persons authorized to receive it. A body must always be searched in the presence of witnesses. In case of murder, all weapons, clothing worn by the deceased, etc., shall be carefully marked and preserved for the medical examiner's inquest, and later for the prosecuting attorney.

21. No men of the uniformed force shall incur expense to the Westchester County Park Commission Patrol without permission.

22. It shall be the duty of each person connected with the force to subject himself to the lawful orders of his superior officers; to be familiar with the contents of these rules and regulations, as well as all general orders by the force, and to conform to the provisions therein contained.

ORDINANCES, RULES AND REGULATIONS CONCERNING THE ORGANIZATION AND GOVERNMENT OF THE POLICE FORCE, SOUTH PARK DISTRICT, CHICAGO, ILLINOIS

Police Force Organization. There are hereby created the offices of one lieutenant of police and such number of sergeants and patrolmen as may from time to time be deemed necessary by the South Park Commissioners, which offices shall be filled as the needs of the service require, and at the direction of the commissioners. Said officers and patrolmen with the captain of police shall constitute the police force. Under the direction of the general superintendent, the captain of police shall have immediate charge of the police department and all officers and employees thereof. The general superintendent shall make such rules and regulations for the government of the police force as he may consider necessary or proper and which are not inconsistent with any ordinance of the commissioners. All members of the police department shall have power and it shall be their duty to arrest any person found in the act of violating any law of the state or ordinance of the South Park Commissioners or aiding or abetting in such violation, and shall take all persons so arrested before some court of competent jurisdiction in the South Park District. In case no such court is in session, the person so arrested may be detained in any police station in the City of Chicago, within the South Park District, or any safe place until such person so arrested can be brought before such court.

The members of the police force shall devote their entire time and attention, when on duty, to the enforcement of the laws of the State and the ordinances of the commissioners, according to the regulations of the general superintendent and under the direction of their superior officers, and shall always be subject to discipline when in uniform, whether on duty or not, and while on duty whether in uniform or not.

Rules for the Government of South Park Police Officers

1. All officers are expected to be on their beats during the following hours, except as different directions may be given to individual officers by the captain.

Day Men not on Duty in Small Parks. Early men, 7.30 A.M. to 6.00 P.M.; late men, 9.30 A.M. to 7.00 P.M. Two hours is allowed for dinner between 11.00 A.M. and 3.00 P.M., one of the exchanging officers to be on duty at all times.

Day Men in Small Parks. From 8.30 A.M. to 7.00 P.M.; two and one-half hours is allowed for dinner between 1.30 P.M. and 4.00 P.M.

Half Day and Half Night Men in Small Parks. 1.30 P.M. to 11.15 P.M.; one hour and three-quarters is allowed for supper, the time to be designated by the captain. Half day and half night men other than those in small parks, from 2.30 P.M. to 11.30 P.M.; one hour is allowed for supper between 6.30 P.M. and 7.30 P.M.

Night Men. Early men, 7.00 P.M. to 1.00 A.M.; no time allowed for supper; late men, 7.30 P.M. to 7.30 A.M. Two hours is allowed for supper between 11.00 P.M. and 1.00 A.M., one of the exchanging officers to be on duty at all times. Should there be police business requiring attention, officers will remain as much later as necessary.

2. All officers shall make themselves thoroughly familiar with the ordinances adopted by the South Park Commissioners for the regulation of the parks and boulevards, which are printed in the fore part of this book, and any neglect to see these ordinances observed will be a failure on their part to properly discharge their duties.

3. Should an officer be compelled to make an arrest of anyone who persists in violating the ordinances, he shall do so in such a manner that the person arrested cannot rightfully accuse him of improper conduct. Arrests should not be made upon slight provocation, and offenders must be warned, politely, that they are trespassing the ordinances, and be requested to desist. When an arrest is made it must be quietly and decorously, and the officer shall avoid unnecessary violence or harshness; the punishment of offenders is not a part of a police officer's duty.

4. Insolence or profane language shall not, under any circumstance, be used. Officers shall not smoke while on duty.

5. Officers shall avoid any unnecessary show of authority, and when enforcing an ordinance shall do so with as few words, only, as may be required to express their meaning.

6. Officers shall not discuss the laws or ordinances. Refrain from giving their opinion as to what ordinance should or should not be enforced.

7. Officers shall be neat in their person and attire, and in their movements shall be careful to avoid any appearance of sauntering or listlessness; they shall be prompt and polite in answering the questions of persons in the park for information concerning it, but not officious or forward; they shall render every assistance possible in case of accident, being careful to take the names and addresses and vehicle license numbers of all parties connected with the accident, and make a written report immediately of the same to the captain, and see that injured persons are properly cared for; and they shall be especially solicitous for the safety and comfort of women and children.

8. Officers shall not, while on duty, read newspapers, books or periodicals, and shall not ride in any vehicle upon the driveways of the parks and boulevards except it be absolutely necessary in the discharge of their duty. Umbrellas or canes are not to be carried by officers while on duty.

9. Officers shall be orderly in the performance of their duties, and have full control of their temper, and shall be unmindful of criticism from individuals.

10. Any officer who shall visit a place where intoxicating liquors are sold or dispersed at any time, unless in discharge of his duty, or shall be found intoxicated, will be suspended and charges preferred before the Civil Service Board.

11. Officers shall be mindful of the general interest of the park, being careful to see that anything which may be in the driveway that is likely to frighten horses is removed at once, and to report anything which they may see which is dangerous or unsightly.

12. Officers shall keep within the limits of their assigned beats, unless it be to go to the assistance of another officer or perform a necessary service which requires their leaving their beats. Officers shall not be together unless it is necessary in the discharge of their duties, and shall separate as soon as possible when so together.

13. The uniform shall be kept in as cleanly and tidy condition as possible. It shall be worn by the officers only while on duty. Officers shall not, because of their being police officers, seek to gain admission into places where they would otherwise have to pay an admission fee.

14. Any officer who by sickness is rendered unable to report for duty shall see that the desk sergeant is at once informed of the fact, and upon his recovery notify the desk sergeant when he can return to duty.

15. Officers are not allowed to smoke in public while in the uniform of the park commissioners, whether on or off duty.

16. Officers shall give their name and number of star to all who may have occasion to inquire. No member of the police department in uniform, while riding on street cars, elevated or passenger trains, shall occupy a seat in such car or train while any other person is obliged to stand because of lack of seats.

17. Officers shall remain on their posts until the termination of their hours of duty, and shall await and communicate to the officer who relieves them, all information of importance necessary to a proper performance of their duties.

18. Officers will, in serious accident cases, at once telephone the facts to the desk sergeant and later make written report to the captain. Officers having made an arrest will, as soon as prisoner is booked, telephone the facts to the desk sergeant.

19. All officers will, before they go off watch, call in the names, addresses and all other pertinent information concerning persons to whom summons slips have been issued during the day or night.

20. The failure of officers to properly discharge their financial obligations will not be tolerated.

Examples of Legal Provisions Giving Police Authority to Park and Recreation Employees

"The keepers of the several parks shall be sworn in as special police and be intrusted with the enforcement of the provisions of this article, and shall at all times have the assistance of the regular police force in carrying out the same." (Revised Code or General Ordinances, St. Louis, Missouri, Article LXVIII, Section 1884.)

"*Police powers.* The superintendent of recreation and playground directors, while on duty and for the purpose of preserving order and the observance of the rules, regulations, and by-laws of the commission, shall have all the powers and authority of police officers, and it shall be incumbent upon them to preserve order on the playgrounds and in recreation centers at all times. Any person or persons who shall violate any of the rules of the commission shall be deemed and adjudged guilty of disorderly conduct." (Extract from Code of City of Savannah, Chapter X, Section 210, page 56.)

"*Police powers.* The directors of playgrounds shall have full police powers, and for that purpose shall be sworn in as special policemen by the superintendent of police, and furnished with suitable badges of authority, and shall have full power to eject from any public playground any person who acts in a disorderly manner or in a manner calculated to interfere with the full enjoyment of the same by the public. Special officers must report every three months to the assistant superintendent of police to renew their commissions." (Rules and Regulations, Municipal Playgrounds, City of Chicago, Illinois, 1924, page 11.)

Park Police Pension Fund

One of the serious drawbacks to service in most of the park police forces in this country is the lack of a pension system. Pension systems for municipal police are now almost universally adopted in the larger cities, and in some states there are general state laws covering this subject with respect to municipal police. There are only a few park systems that have a scheme for pensioning their park police. Among these few are the following:

1. Illinois. In Illinois there is a general law covering the subject. (See Illinois Revised Statutes, Cahill, 1925, Chapter CV, Sections 418–428 inclusive, pages 1774–1778.) This law provides that wherever any persons have been constituted a board of park commissioners in any one or more towns and such board of park commissioners shall have established a police force under the employ of such board, there shall be created, maintained and disbursed in the manner prescribed in this Act a pension fund for such policemen. The fund is constituted by deducting two and one-half per

cent from the monthly salary of each policeman plus a special tax levied by the board of park commissioners. The maximum of the tax for this purpose that can be levied by the South Park Commissioners is two seventy-fifths of a mill on the dollar upon all taxable property in the district; that by the West Chicago Park Commissioners cannot exceed one-fifteenth of a mill; and by the Lincoln Park Commissioners not above two fifty-firsts of a mill. This tax is over and above all other taxes levied for the purposes of the districts.

Any policeman who has served twenty years and attained the age of fifty years may retire on a pension equal to one-half of the salary he was receiving for one year prior to his retirement; or if through disability incurred in discharge of duty he is forced to retire he will receive a pension of like amount; but in no case shall the pension received be over the sum of eleven hundred dollars or less than six hundred dollars per annum. Upon the death of any pensioned patrolman or upon the death of a patrolman in discharge of duty, his widow, providing the marriage took place one year prior to time pension was granted, shall receive a pension of fifty dollars per month and an additional ten dollars per month for every child under eighteen years of age. If any child ceases to attend school between the ages of fourteen years and eighteen years the allowance for that child will be reduced to five dollars per month. Should a pensioned patrolman leave no widow surviving him or should his widow die before his children arrive at the age of eighteen years, each child shall receive, while regularly attending school, the sum of fifteen dollars per month. Pensions for children cease upon arrival at the age of eighteen years. This act became a law May 19, 1917 and in force July 1, 1917.

The act referred to was followed in 1921 by an act to provide for the creation, setting apart, maintenance and administration of a park policemen's annuity and benefit fund, applicable in the South Park, West Chicago and Lincoln Park districts. This act is too long and detailed to present even a synopsis of it here, but the entire act can be found in Illinois Revised Statutes, Cahill, 1925, Chapter CV, Sections 429–484 inclusive, pages 1778–1799. This act became a law June 29, 1921 and in force July 1, 1921.

2. Essex County, New Jersey. A police pension fund was established in the Essex County Park System (New Jersey) in 1910. A pension of one-half of pensioner's wages or salary after twenty years service and reaching the age of sixty years is allowed. A pension for the same amount is allowed for disability incurred in discharge of duty; and in case of death in discharge of duty a similar pension is allowed widow and minor children. The pension fund is constituted by funding an amount equal to eight per cent of wages of each member of the police force, three per cent of which is paid by the men and five per cent by the Board of Park Commissioners.

Examples of Rules and Regulations Adopted by Some Park and Recreation Governing Authorities for the Governance of the Use of Properties

RULES AND REGULATIONS GOVERNING THE USE OF PARKS UNDER THE CONTROL OF THE FAIRMOUNT PARK COMMISSION, PHILADELPHIA, PENNSYLVANIA[1]

Riding and Driving

1. No person shall drive or ride a horse in the parks at a rate exceeding seven miles an hour.

2. No person shall ride or drive therein upon any other part of the parks than the avenues and roads.

3. No vehicle of burden or traffic or one displaying a commercial advertisement shall pass through the parks, except as hereinafter designated.

4. No dangerous horse or animal shall be allowed to enter or be within the limits of the parks.

5. No person shall lead a horse within the limits of the parks that is not harnessed and attached to a vehicle or mounted by an equestrian, unless bridled and saddled and in charge of a mounted groom.

6. No person shall ride or drive an animal not well broken and under proper control of the rider or driver, and, if such animal shall enter the parks it shall be removed promptly by the guard.

7. No person shall drive, ride, lead or bring into the parks any horse without a bridle or remove the same from the animal's head whilst in the parks.

8. No person shall bring into the parks a horse or other animal with a card or sign on which are the words "For Sale" attached to the harness or elsewhere.

9. No person shall graze a horse or any other animal within the limits of the parks.

10. All horse-drawn vehicles in the parks shall carry, between sunset and sunrise, a light on each side in a conspicuous position, so as to be readily seen, showing white in front, and red in the rear, at a distance of at least two hundred feet.

11. No vehicle shall stand in any part of the parks for the purpose of hire.

12. No driver or operator of any vehicle shall solicit passengers in the parks.

13. No wagon or vehicle of an undertaker having his name or business thereon shall pass through parks.

14. No vehicle shall stand upon a drive or any part thereof, if by so doing it congests traffic or obstructs the road.

15. No vehicle shall remain on a drive without a driver or attendant in charge of it.

16. No horse or other animal, or a second horse and vehicle, shall be led on the roadways.

17. No vehicle shall stand on a drive at or near Belmont or Strawberry Mansions during the progress of the concerts.

18. No vehicle within the parks shall display any flag, banner or other device, that in any way may frighten horses.

19. No person shall turn cattle, goats, swine, dogs, horses or other animals loose in the parks.

20. No person shall tie or hitch a horse or other animal in the parks, except at places designated and set apart for such purpose.

21. Belmont Avenue within the park limits may be used by vehicles of burden and funerals, as well as for general park riding and driving.

22. Until three o'clock P.M. funerals may pass over Thirty-fourth Street, drive northwardly to Girard Avenue and thence eastwardly, but not westwardly.

23. Every rider, driver or operator of a vehicle shall come to a full stop at the signal of a guard.

Motor Vehicles

1. Motor busses and motor omnibuses for the conveyance of passengers over regular routes for hire may use only such roads and drives or parts thereof as may be designated from time to time by resolution of the commissioners.

2. Other motor vehicles for the conveyance of passengers may use all the drives in the parks, except Wissahickon Drive north of its intersection with Lincoln Drive.

3. Operators in charge of motor vehicles must be skilled in the management of such vehicles, and learners will not be permitted to operate on the park drives.

4. Operators of motor vehicles must conform to the rules governing other vehicles in the parks, as well as all laws relating to motor vehicles.

Bicycles

Riders of bicycles shall comply with all the rules of the road and in addition thereto shall be subject to the following regulations:

1. Every machine must be provided with a bell, so arranged that it shall be under the complete control of the person riding the wheel, and shall be distinctly heard at a distance of thirty yards, sleigh bells, large gong bells and continuously ringing bells being prohibited.

2. Every machine, while in motion after dark, must have a lighted lamp attached to the axle of the front

[1]Consisting of Fairmount Park, Hunting Park, Burholme Park, Clifford Park, Cobb's Creek Park, Fisher Park, Pennypack Park, Wister's Woods, Morris Park, Fernhill Park, Cloverly, Pastorius Park, Wakefield Park, Kemble Park, Logan Square, Rittenhouse Square, Washington Square, Franklin Square, The Parkway, Palmer Park, Tacony Creek Park, Roosevelt Boulevard, Oregon Plaza, Southern Boulevard, League Island Park and Woodward Pines.

wheel. The lamp must show a white light in front and a red light in the rear. Chinese lanterns are not permitted.

3. Not more than two machines shall be ridden abreast.

4. Riding crosswise and curving to and fro are strictly prohibited.

5. Children riding small machines may use the footwalks.

6. Coasting within the limits of any park is prohibited, and the rider must not take his hands off the handles.

7. When a wheelman is unable to ride a hill or roadway in any park, he must dismount and push his machine up the adjoining footpath, if one is available, until a suitable level is reached, where he may remount and proceed.

8. In case of an accident, which cannot be repaired at the time, the rider must leave the park by the nearest exit.

9. Blowing of horns, playing of musical instruments of any kind or having musical instruments, shades or awnings attached in any way to a bicycle or tricycle, is forbidden.

10. Infants or children shall not be carried on bicycles in any manner whatever.

11. A bicycle shall not be towed by rope or otherwise.

Athletic Sports

The portions of the parks set apart for ball, croquet or other games are under the following regulations:

1. No person shall engage in any play at baseball, cricket, shinney, football, tennis, croquet or any other game with ball and bat, nor shall any foot race or horse race be permitted within the limits of the parks, except on grounds specially designated for such purpose, and the playing of games within twenty feet of any drive is prohibited.

2. No person shall join in any game without the consent of the persons of whom the game is composed, or in any manner disturb or interfere with the same.

3. No person shall erect tennis nets or occupy any ground set apart for tennis, baseball, croquet or other games for the purpose of holding the ground.

4. No person shall play tennis unless wearing rubber-soled shoes without heels.

5. No person shall erect a net or play on a court until the flag is displayed from the flagstaff. The flag will not be displayed when the courts are not in proper condition for play.

6. All games must start within thirty minutes after the tennis net has been erected or the players shall forfeit the court.

7. No person shall bat balls on any court. Only the regular game of tennis will be permitted.

8. All persons using any athletic or boating facilities furnished by the commission shall comply with the regulations established from time to time for their use.

Boating

1. No person shall use the shores of the River Schuylkill within the boundaries of Fairmount Park as a landing place for boats or keep thereat boats or floating boathouses for private use or hire, except by license or lease granted by the commission, and only at places designated and under restrictions determined by said commission.

2. All steamers, launches, rowboats, canoes or barges going up the river shall keep to the east shore and those coming down the river to the west shore, except in the portion of the river immediately adjoining the tow-path along the west shore and between that and Belmont Island, where the Schuylkill Navigation Company law prevails.

3. No regatta or boat race shall take place within the boundaries of Fairmount Park without permission granted by the commission.

4. No person shall remove any of his clothing while on the Schuylkill River that may cause improper exposure.

5. The carrying capacity of boats and canoes within park limits shall be as follows: Boats: 12 feet long, 4-foot beam, two persons; 14 feet long, 4-foot beam, three persons; 14 feet long, 4-foot, 6-inch beam, six persons (family boat); 18 feet long, 3-foot beam, two persons (gig). Canoes: 15 feet long, 30-inch beam, two persons; 16 feet long, 30-inch beam, three persons; 17 feet long, 31-inch beam, four persons; 18 feet long, 31½-inch beam, five persons.

6. All launches, barges, rowboats, sailboats, motor boats and canoes shall display a light from the bow after sunset, while in the stream with passengers on board, and shall in all other respects comply with the laws relating to such vessels.

7. No boat or canoe shall be kept or used in Fairmount Park without a license from the commission, except boats of clubs belonging to the Schuylkill Navy or other recognized boat clubs holding leases or licenses from the commission. All such boats shall when under way between sunrise and sunset display the flags of their clubs.

8. All boats and canoes for which individual licenses are required shall for identification purposes display the number inserted in the license on each side of the bow in figures at least two and one-half inches high. All persons violating this rule shall, in addition to the usual fine, forfeit permission to keep a boat or canoe within park limits.

9. No person shall operate a motor boat within the park limits at a rate of speed exceeding eight miles an hour.

Zoölogical Garden

1. No person shall injure, molest or disturb any animal under the care and control of the Zoölogical Society of Philadelphia within the park limits.

2. No person shall give or offer or attempt to give to any animal under the care of the Zoölogical Society of Philadelphia within the park limits any tobacco or other noxious article or anything prohibited to be given to animals by printed notices conspicuously posted within the Zoölogical Garden.

Personal Regulations

1. No person shall enter or leave the parks except by the entrances provided for the purpose.

2. No person shall stand or lie down on a bench or seat in the parks.

3. No person shall enter a retiring house set apart for the use of the opposite sex.

4. No person shall climb any tree or break, cut down, trample upon or remove or in any manner injure or deface any statue, ornament, tree, plant, shrub, fern, flower, flower bed, turf or any of the buildings, fences, bridges or other constructions within the parks; nor shall any person write on any building, structure, fence, rock or stone within the parks, or pick or carry away any fern or flower, except violets, buttercups, daisies or dandelions.

5. No person shall remove, disturb, interfere with or take any of the blossoms or fruit growing upon any tree, shrub or bush in the parks.

6. No person shall in any wise injure or foul any fountain or spring within the parks.

7. No person shall carry firearms or shoot birds in the parks, or within fifty yards thereof, or throw stones or other missiles therein.

8. No person shall annoy, strike, injure, maim or kill any animal, either running at large or confined in a close, in the parks.

9. No person shall disturb the fish or water fowl in the streams, pools or ponds, or birds, nests or eggs in any part of the parks.

10. No person shall go in to bathe within the parks, except at such places as may be designated by the commissioners.

11. When ice on the river or lakes becomes unsafe, the park guards will warn all persons thereon to leave by sounding their whistles, or otherwise, and all persons shall promptly leave the ice.

12. No person shall sell or expose for sale any tickets of any kind in the parks.

13. No person shall solicit alms or subscriptions in the parks.

14. No person shall solicit permission to photograph visitors or take the photograph of any person or persons without their consent.

15. No gathering or meeting of any kind, assembled through advertisement, shall be permitted in the parks without the previous permission of the commission; nor shall any gathering or meeting for political purposes be permitted in any circumstances.

16. No person shall have any musical, theatrical or other entertainment therein without the license of the commission.

17. No person shall sell or expose any article for sale within the parks without the previous license of the commission.

18. No person shall take the ice from any stream or lake within any park without the previous license of the commission.

19. No carrousel, swing or like amusement device shall be operated in the parks on Sunday.

20. No threatening, abusive, insulting or indecent language or any conduct that may annoy others shall be allowed in the parks.

21. No gaming or any obscene or indecent act shall be allowed in the parks.

22. No intoxicating liquors shall be sold within the parks.

23. No person shall discharge any fireworks in the parks without the previous license of the commission.

24. No person shall throw any dead animal or offensive matter or substance of any kind into the River Schuylkill or other waters within the boundaries of any park.

25. No person shall scatter, drop or leave in any portion of the parks, except in the receptacles provided for the purpose, any piece of paper, rag, garbage, dead flower or other rubbish.

26. No person shall injure, deface or destroy any notices, rules or regulations for the government of the parks posted or in any other manner permanently fixed within the limits of the same.

27. No placard, advertisement, public notice or personal card, except park notices, rules and regulations, shall be distributed, posted or affixed in any manner in the parks.

28. No military or other parade or procession or funeral shall take place in or pass through the limits of the parks without the license of the commission.

29. No street railway car shall come within the limits of the parks without the license of the commission.

30. No person, without the authority of the commissioners, shall light or permit a fire to burn in any of the parks, and any one who discovers a fire in any park shall at once notify the nearest guard.

Arrests

The park guards shall without warrant forthwith arrest any offender, whom they may detect in the violation of any of the preceding rules and regulations, and take the person so arrested forthwith before a magistrate having competent jurisdiction, and they shall have at all times the right to enter the premises of the boathouses or other buildings in the parks for the purpose of arresting violators of park rules and may use all necessary means to attain that end.

Punishment

Any person who shall violate any of the foregoing rules or regulations shall be guilty of a misdemeanor and for each and every such offense shall pay a fine of five dollars, to be recovered before any magistrate of the City of Philadelphia as debts of that amount are recoverable, which fine shall be paid into the city treasury for park purposes.

Permits

All permits issued by the secretary or chief engineer shall be subject to park rules and regulations, and the persons to whom such permits may be granted shall be bound by said rules and regulations as fully as though the same were inserted in said permits, and any person or persons to whom such permits may be granted shall be liable for any loss, damage or injury sustained by any person by reason of the negligence of the person or persons to whom such permits may be granted, their servants or agents.

By order of the Commissioners of Fairmount Park.

E. T. Stotesbury, President.

Attest: Thomas S. Martin, Secretary.

RULES AND REGULATIONS FOR THE GOVERNMENT OF PUBLIC PARKS, PASADENA, CALIFORNIA

General Departmental Rules

Any accident or property damage should be reported to this office immediately. For information and guidance Ordinance No. 539, covering the rules and regulations for the government of public parks, and extracts from Ordinance No. 2249, are inserted here verbatim:

Section 1. It is hereby declared to be unlawful for any person or persons to do any of the acts hereinafter specified within the limits of any of said public parks.

1. To lead or let loose any cattle, horse, mule, goat, sheep, swine, dog or fowl of any kind, provided that this shall not apply to dogs when led by a cord or chain not more than six feet long.

2. To carry or discharge any firearms, firecrackers, rockets, torpedoes or any other fireworks.

3. To cut, break, injure, deface or disturb any tree, shrub, plant, rock, building, cage, pen, monument, fence, bench or other structure, apparatus or property; or to pluck, pull up, cut, take or remove any shrub, bush, plant or flower; or to mark or write upon any building, monument, fence, bench or other structure.

4. To cut or remove any wood, turf, grass, soil, rock, sand or gravel.

5. To distribute any handbills or circulars, or to post, place, erect any bills, notice, paper or advertising device or matter of any kind.

6. To swim, bathe, wade in, or pollute the waters of any fountain, pond, lake or stream.

7. To make or kindle a fire for any purpose (except in places provided therefor).

8. To camp or lodge therein.

9. To ride or drive any horse, or other animal, or to propel any vehicle, cycle, or automobile elsewhere than on the roads or drives provided for such purpose, and never on the footpaths.

10. To indulge in riotous, boisterous, threatening or indecent conduct, or abusive, threatening, profane or indecent language.

11. To sell, or offer for sale, any merchandise, article or thing, whatsoever, without the written consent of the city manager.

12. To hitch, or fasten any horse, or other animal, except at a place specially designated and provided for such purpose.

13. To ride or drive at a rate of speed exceeding fifteen miles per hour.

14. To ride or drive any horse or animal not well broken and under perfect control of the driver.

15. To play or bet at or against any game which is played, conducted, dealt or carried on with cards, dice or other device, for money, chips, shells, credit or any other representative of value, or to maintain or exhibit any gambling table or other instrument of gambling or gaming.

16. To practice, carry on, conduct or solicit for any trade, occupation, business or profession, without the written permission of the city manager.

17. To play or engage in any game, excepting at such place as shall be specially set apart for that purpose.

18. To drive or have any dray, truck, wagon, cart, perambulator or other traffic vehicle, carrying or regularly used or employed in carrying goods, merchandise, lumber, machinery, oil, manure, dirt, sand or soil, or any article of trade or commerce, or any offensive article or material whatsoever upon any road or drive, except such as may be especially provided or designated for such use.

19. To drink any spirituous, vinous, malt or mixed liquors.

20. To throw or deposit any bottles, tin cans, broken glass, paper, clothes, sheet iron or any rubbish.

21. To sell or offer for sale any real or personal property, or share of stock or other interest in any mining, oil developing or other project, or to solicit for the carrying of passengers free or otherwise for the purpose of viewing, advertising, selling or buying real or personal property, or shares of stock, or other interest in any mining, oil developing or other project.

22. To drive or operate any motor vehicle in excess of fifteen miles per hour.

23. To pick, dig up or remove any wild flowers, yucca, shrubbery, young trees or plants of any description.

Section 2. No company, society or organization shall hold or conduct any picnic, celebration, parade, service or exercise in any public park without first obtaining permission from the city manager of said city, and it shall be unlawful for any person to take part in any picnic, celebration, service or exercise held or conducted contrary to the provisions hereof.

Section 3. It shall be unlawful for any person having the control or care of any dog to suffer or permit such dog to enter or remain in a public park unless it be led by a leash of suitable strength not more than six feet in length.

Section 4. It shall be unlawful for any male person over eight years of age to enter or use any water-closet for women in a public park.

Section 5. Any person violating any of the provisions of this ordinance shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be punished by a fine in a sum not exceeding two hundred dollars or by imprisonment in the city jail for a term not exceeding three months, or by both such fine and imprisonment at the discretion of the court.

Section 6. All foremen and employees in public parks are hereby given the power and authority of special policemen for the purpose of making arrests for any violation of the provisions of this ordinance.

ORDINANCES RELATING TO THE GOVERNMENT OF PARKS, BUFFALO, NEW YORK

Chapter LXVIII. Section 1. Definitions. The terms park and parks wherever used in this chapter, unless otherwise stated, shall include the grounds known as the Park, the Parade, the Front, and all other parks, public grounds and public waters (not being an approach or part of an approach) which are now or may hereafter be under the control of the Department of Parks and Public Buildings. The term approach wherever used in this chapter shall include the avenues and parkways leading to or connecting said parks which are now or may hereafter be under the control of the Department of Parks and Public Buildings, and the Circle, and the Bank, Soldiers' Place, Gates Circle (formerly Chapin Place), and Colonial Circle (formerly Bidwell Place), and all other lands forming and designated as a part of an approach. The term person as used in this chapter shall include an individual, firm, partnership, corporation and association of persons and the singular number shall include the plural number.

Section 2. All ordinances shall apply to every part of the city, except that if any ordinance provision, other than those contained in this chapter, is in conflict with the provisions of this chapter, the provisions of this chapter shall control in the parks and park approaches.

Section 3. All public meetings, assemblies, military and other parades and funeral processions are prohibited in the parks and on park approaches, without written permission from the commissioner of parks and public buildings, except that the funeral of any person held from a property abutting on any park approach may proceed along such approach. No person shall make any oration, harangue or public speech in any park or park approach, without the written permission of said commissioner.

Section 4. No person shall play any music or keep or offer anything for sale, except as otherwise provided by law, or solicit passengers for hire, or post or display any sign or placard, flag, banner, target, transparency, or advertisement of any kind, within any park or park approach, building or place under the jurisdiction of the Department of Parks and Public Buildings, without the written permission of the said commissioner, and then only subject to such rules and regulations as shall be prescribed by said department.

Section 5. No person shall make any ascent in any balloon or aeroplane from any park or parkway, nor land therein from any such balloon, aeroplane or parachute.

Section 6. No person shall fire or discharge any gun, pistol, firearm or any rocket, torpedo or other fireworks of any description, throw stones or missiles, build any fire, or carry any firearm in any park or parkway, without legal authority to do so.

Section 7. No person shall engage in any sport, game or amusement in any park or park approach, except upon such portions thereof as may be designated for the purpose by the Department of Parks and Public Buildings, and then only under such rules and regulations as may be prescribed by said department. Permits for the exclusive use of any picnic or playground for any specified date or time, not longer than one day, may be granted at the discretion of said commissioner, and no person shall in any manner disturb or interfere with any person or party occupying the ground under such permit.

Section 8. No person shall climb any tree, or pluck any flowers, or fruit, wild or cultivated, or break, cut down, trample upon, remove, or in any manner injure or deface, write upon, defile or ill-use any tree, shrub, flower, flower bed, turf, ornament, statue, building, fence, bridge, structure or other property within any park or park approach.

Section 9. No person shall bathe in any of the parks, park approaches or the waters connected therewith, except such places as may be designated therefor by the Department of Parks and Public Buildings, or attempt to take any fish, or send or throw any animal or thing into or upon any of the waters of the parks, or kill, injure or attempt to injure, or unnecessarily disturb the fish in said waters or any waterfowl or other birds or animals, wild or domestic, within any of the parks or park approaches. Nor shall any person

rob the nest of any bird therein, or in any manner torment, annoy or cruelly treat any bird or animal therein.

Section 10. No person shall open a trench for any purpose, or dig into, or take up any part of any park or park approach, without the written permission of the Commissioner of Parks and Public Buildings. The person to whom such permit is granted shall complete the work within the time specified in said permit, and shall do said work and refill and replace or remove in a substantial and workmanlike manner all material disturbed by him, and leave the place where said work was done in as good condition as before said work was begun.

Every person who shall receive a permit to open a trench as above stated shall at all times after such work has been commenced, and until the same has been completed and until all accumulations of materials resulting from such work have been removed, so guard and protect the same that persons driving or passing along the roadway or sidewalk or in the vicinity of the place where the work is being done, shall not be liable to meet with any accident therefrom; and shall also during the time, from sunset to sunrise of each night, while said work is in progress, cause the same to be securely fenced and guarded by a red light placed in a conspicuous position and so secured that the same shall not be extinguished.

Section 11. The location, width, grade and construction of all paths, driveways and roadways across any sidewalk border along any park approach shall be subject to the approval of, and constructed only after written permission therefor is obtained from the Commissioner of Parks and Public Buildings.

Section 12. The location of all sewers and receivers, gas pipes, water pipes, stopcock boxes, hydrants, lamp posts, telegraph, telephone and electric power posts and lines, manholes, conduits and pumps shall be subject to the jurisdiction and control of the Commissioner of Parks and Public Buildings, and their construction, erection, repair or relocation shall be undertaken only after written permission is received from said commissioner.

Section 13. The owner or occupant of any premises abutting on a park approach shall cause the sidewalk in front of or adjacent thereto to be kept clear and all snow, ice and dirt to be removed therefrom before 9.00 A.M. each day.

Section 14. No person shall deposit, dump, throw or place any earth, rubbish, dust, manure, paper, garbage, slops or other refuse matter, or any sand, stone, lumber or building material, or any substance of any kind, in or upon any part of the waters or grounds of any park or park approach, except ashes and garbage in suitable boxes or barrels on such days as are designated by the street department for collection, and subject to its regulations, without a permit from the Commissioner of Parks and Public Buildings, and all such permits, if given for building purposes, shall be granted only to the owners or occupants of the property to be built on or to their authorized agents.

Such permits shall be conditioned that said material be properly guarded and a red light conspicuously displayed thereon between sunset and sunrise. No permanent damage shall be done to any improvement on said park approach, and all temporary damage or obstructions of any kind shall be made good or removed before the expiration of the time stated in said permit.

Section 15. No sign, awning, frame, steps, raised platform, door, porch, bay window, cornice, roof, vault, cellar wall, cellar way, area way, fence or any part of any structure erected on property adjacent to a park or park approach shall be permitted to project over or under the boundary lines of said park or park approach.

Section 16. No person shall sleep in any park, or park approach. No person shall swing, occupy or use any hammock therein, except such portions thereof as may be designated by the rules of the department for such purposes.

Section 17. No quadruped or other animals, except those placed in the parks by the authority of the Department of Parks and Public Buildings, excepting horses and other animals used for riding and driving, shall be conducted into or driven in the parks or parkways, or be allowed to remain therein. Dogs found running at large within any park may be shot by a policeman or other officer on duty connected with the parks.

Section 18. No animal used for riding or driving, nor vehicle of any description will be allowed upon any part of the parks, except upon the rides, drives, concourses and other places set apart for horses and vehicles. Nor will any vehicle be allowed upon any footwalk, ride or bridle path.

Section 19. No person, except those in the employ of the Department of Parks and Public Buildings, shall, without written permission from the Commissioner of Parks and Public Buildings, place upon the lake or any of the waters of the parks any float, boat or other watercraft, or land or go upon either of the islands of the lakes, or land or touch with a boat upon any part of the shores of the lakes not designated as a landing place. Nor shall any person walk upon or in any manner use or occupy the slopes between the water line of the lakes and footpaths.

All trees on park approaches in front of any property upon which building operations are under way shall be properly boxed to protect the same during the progress of such work. No trench for any purpose shall be dug within five feet of any such tree, and sidewalks and driveways shall be kept three feet distant from any such tree, except as otherwise permitted by said commissioner in writing.

Section 20. No person shall, without the written permit of the Commissioner of Parks and Public Build-

ings, cut, remove, plant, break or injure any tree or plant in any of the streets or public places in the City of Buffalo; nor shall any person injure or remove any device placed and intended to protect any tree or shrub in any part of the streets or public places of the said city. No person shall fasten a horse or other animal to any tree or shrub or to any device for the protection of the same, or place a hitching post within five feet of any tree or shrub in any of the streets or public places of said city.

Section 21. No person shall interfere with or in any manner hinder any employee of the city while engaged in constructing, repairing or caring for any portion of the parks or park approaches, or while in the discharge of the duties conferred by this chapter of the ordinances.

Section 22. No person shall operate or cause to be operated any street car across any park, which car has not been brought to a full stop at the near side of said park approach or entrance and before reaching the same. No such street car shall be operated across any park approach at a greater rate of speed than eight miles per hour. No person shall cause or permit any engine, street car or train to stop or stand on or across any park approach, nor shall any track or tracks laid across any such park approach at grade be used at any time for switching purposes.

Section 23. It shall be the duty of every person operating a vehicle within the parks or park approaches, to comply with all lawful orders, directions and regulations displayed upon any post, standard, sign, semaphore or device installed for the regulation of traffic.

Section 24. The parks shall be closed each night between the hours of 10.00 P.M., Standard Time, and sunrise the following morning, and no person shall lounge about or remain in any of said parks during said hours.

Section 25. Until otherwise directed by the Council, the Commissioner of Parks and Public Buildings is hereby authorized to adopt rules and regulations for the proper conduct and administration of the parks and park system in the City of Buffalo, to grant permits in conformity with the provisions of this chapter, and to perform such other acts with reference to the management of the said parks and park system in said city as he may deem expedient to promote the beauty and usefulness of said parks and to increase the comfort, safety and convenience of the citizens of Buffalo, and other visitors to said parks, in their use of the same.

Section 26. All rules, by-laws and ordinances heretofore enacted by the former Board of Park Commissioners are hereby repealed; and all ordinances or parts of ordinances of the City of Buffalo inconsistent with the provisions of this chapter shall have no application to the parks or park approaches.

Section 27. Any person violating any of the provisions of this chapter shall be liable to a fine or penalty not exceeding $250 for each offense.

REFERENCES

"General Statistics of Cities," 1916, Bureau of the Census, United States Department of Commerce, pages 25–27 and pages 59–60. Contains on pages 25–27 a general discussion of the methods of policing parks throughout the United States in cities of 30,000 population and over, the number of park police, sources of revenue for paying for policing and the salaries paid park police; and on pages 59–60 presents a table showing number of park police in different cities and appropriations from which salaries are paid.

Policing, Bulletin No. 6, August, 1910. Published by the American Association of Park Superintendents. Symposium by various park executives upon the general subject of park policing.

Note: Playground and Recreation Association of America, 315 Fourth Avenue, New York City. A great deal of material is on file at the office of the association on the cost of park policing, salaries of officers, organization of park police forces in different cities, Civil Service requirements, and rules and regulations for the government of the use of parks. A copy of any of this material can be had on application.

CHAPTER XV

PARK LIGHTING[1]

SECTION I

GENERAL CONSIDERATIONS

Park lighting, including the three main classes of general park lighting, floodlighting for decoration, and night lighting for sports, is a necessary element in park planning. One of the primary reasons for adequate general park lighting is the consequent lessened possibility of night crime and accidents. "A street lamp is as good as a policeman,"— a statement attributed to a former Chicago mayor — is one which may well be applied to park lighting. Undoubtedly, good lighting multiplies the effectiveness of the park police force.

The question of night traffic accidents occurring on park boulevards is closely related to studies made of thoroughfares in some of our larger cities. These surveys, covering thirty-two cities over a period of a year, have shown that 17.6 per cent of night automobile accidents are directly attrib-

PLATE No. 284. LIGHTING STANDARDS MAY BE SO CHOSEN THAT THEY FORM A VERY INCONSPICUOUS PART OF THE BACKGROUND

[1] Courtesy of Engineering Department, National Lamp Works of General Electric Company.

utable to insufficient light. It is not intended to imply that park roadways in general present severe lighting requirements, but merely to call attention to the fact that a certain minimum amount of light is definitely necessary for safety. The walks and roadways need not be so brilliantly lighted as a street proper, except in the case of heavily traveled thoroughfares through the park (Plate 284).

Exceptional possibilities for park beautification are offered by the floodlighting of imposing buildings and monuments (Plate 285). Bathed in light against the darkness of the night, they may be made to compel attention and to inspire admiration. Aside from its application to build-

PLATE No. 285. FLOODLIGHTING MAKES THIS STATUE AS ATTRACTIVE BY NIGHT AS IT IS BY DAY

ings and monuments, floodlighting may be used to advantage in connection with waterfalls and fountains, especially in colors.

The recreational facilities of parks and playgrounds mean health and enjoyment for those of leisure hours, but many, in all walks of life, are forced to forego these pleasures because of lack of daytime leisure. But with the restraint our modern mode of life has placed on our daylight hours has come the modern incandescent lamp (Plate 286). It is probably true that the instances of night lighting for sports out of doors in the past decade were undertaken largely because of the lure of things spectacular — the desire to do something novel. But the few scattered instances have served as laboratory experiments to prove the idea, as well as modern lighting equipment, practicable. It is now possible to release from the bonds of time, millions of people who cannot participate in sports in daylight hours. Midsummer evenings offer but a few hours of daylight after the working day, and at these times the facilities are taxed to the limit. These hours can be doubled or tripled by night lighting, and the playing days extended until late autumn. In southern states where the days are uncomfortably warm, the time for outdoor sports is in the cool of the evening. Night lighting makes such outdoor recreation possible.

General Park Lighting

Two types of distribution systems are available for park lighting, either series or multiple circuits. The choice depends entirely upon local conditions. In the large majority of cases it will probably be found that the series circuit is the most practical, as this system is well adapted to feeding small loads, widely scattered (Plate 287). When small lamps (less than 4,000 lumens each)[1] are used, it is the usual practice to employ low-voltage group transformers, each of which supplies the energy for from fifteen to twenty lamps. With larger lamps (over 400 candle power) a separate transformer is usually furnished for each lamp. It is then located in the base of the lighting standard, or buried in the ground close by. While the multiple circuit is not generally used for park lighting, because of the fact that the loads are widely scattered, it is sometimes perfectly satisfactory for very small parks close to the source of energy supply. For floodlighting and decorative effects, the multiple system of distribution is the most satisfactory, because of the low voltage and the lessened liability of open circuits.

Two general types of cable are suitable for park lighting use — lead-covered cable carried in duct, and armored parkway cable. The first of these, considering the duct and the labor involved in placing it, is rather

[1] The nominal candle power of street-lighting lamps is one-tenth of their lumen rating.

expensive, while the armored parkway cable can be laid in the turf with very little labor, is easily repaired and will give excellent service. Since special equipment, construction and maintenance costs are practically constant for all sizes of lamps, and since electrical energy and lamp renewals (the outstanding variables) constitute but a minor proportion of the total annual operating cost, lamps smaller than twenty-five hundred lumens (250 candle power) should not be considered.

PLATE NO. 286. PLAY HOURS MAY BE DOUBLED OR TRIPLED BY NIGHT LIGHTING

The placing of the lighting standards should be determined with regard to an even distribution of light and with reference to the lines of the park design. It is obvious that lighting standards should not be so placed as to interfere during the day with view or vista and thus become a distracting element. In formal parks, in fact, they may be made to serve as a very helpful accent to the design and should be used for this purpose by the park designers in much the same way as ornamental fixtures are used by architects in the composition of the buildings. Ornamental standards may be obtained in various designs to fit in with the different classes of landscape architecture. Cast iron, pressed steel and hollow concrete are all

suitable materials for park lighting standards. Many municipalities are giving increased thought and study to city planning, and are developing comprehensive lighting plans for the entire city (Plate 288). The family idea of lighting equipment, in which globes and posts are of the same design but of different sizes, is growing in popularity. If a plan of this sort has been laid out, it is strongly recommended that the park lighting standards be selected to conform to those used in other parts of the city (Plate 289).

On pages 798 and 799 are shown (Plates 290 and 291) a group of lighting standards, representative of those which are especially suited to park light-

PLATE NO. 287. AN EXAMPLE OF SMALL LOADS WIDELY SCATTERED, LAKE CLIFF PARK, DALLAS, TEXAS

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FORT WAYNE & ALLEN CO., IND.

PLATE NO. 288. A DRIVE IN A CLEVELAND PARK. THESE LIGHTING UNITS CONFORM TO THOSE USED IN OTHER PARTS OF THE CITY

ing use. The upright standard should be of such a height as to support the lamp at least thirteen and one-half feet above the ground, and preferably higher than this. The bracket arm type of standard, especially useful where foliage would otherwise obstruct the light (Plate 292), should support the lamp from sixteen to twenty feet above the ground. Units should be placed from one hundred and twenty-five to two hundred feet apart, the distance depending on the amount of curve in the walks or drives. From the accompanying sketch (Plate 293) it may be seen how confusing it is to have standards on both sides of the road, and how clearly defined the drive is when the units are mounted on the outside of the curve only.

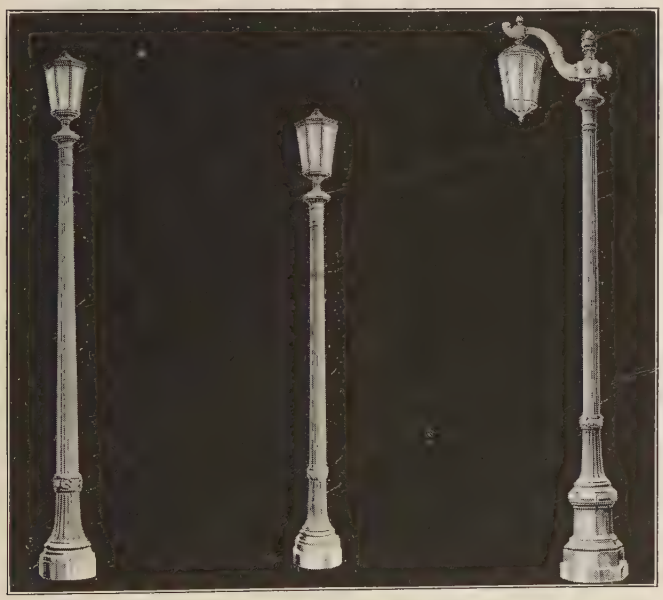

PLATE NO. 289. THE "FAMILY" IDEA. THREE HARMONIZING SIZES AND TYPES OF STANDARDS

Specifications.[1]

Park lighting specifications should be simple and clear, and should cover the following points: Territory to be lighted; period of contract; contractor's duty; hours of burning; number of lamps; description of illuminants; description of fixtures; maintenance of equipment; improvement in art of lighting; additional lamps; outages; current supply; description of present status and arbitration of disputes.

SAMPLE SET OF SPECIFICATIONS

The following shall be the specifications covering park lighting by electricity:

1. *Definition of terms.* In these specifications and contract the term city shall be held to mean the....., or its properly authorized officers. When it is provided that anything is to be done to the satisfaction or subject to the approval of the city and no officer is named to act for the city, it is understood that the director of public service shall so act. The term contractor shall be held to mean the party or parties, partnership or corporation to whom the contract for street lighting is awarded.

2. *Territory to be lighted.* The territory to be lighted by the contractor under these specifications shall be the ..... as its limits now are or as they may be hereafter extended during the life of the contract.

3. *Period of contract.* The period of time for which

Form 24B Novalux Lantern Unit with Colonial alabaster glass panels and dome refractor, made by the General Electric Company. Union Metal Manufacturing Company pressed steel standard with bracket, Design No. 1106, 10,000 lumen (1000 c.p.) mazda C lamp. Height to light source, 18 feet. Length of bracket arm, 2½ feet.

Paragon Senior Top with opalescent rectilinear glass globe, canopy and cast iron post, Design Arcadian A, made by the George Cutter Works of the Westinghouse Electric and Manufacturing Company, 15,000 lumen (1500 c.p.) mazda C lamp. Height to light source, 16 feet.

Form 23B Novalux Lantern Unit with Colonial alabaster glass panels and dome refractor, made by the General Electric Company. Union Metal Manufacturing Company pressed steel standard, Design No. 842, 15,000 lumen (1500 c.p.) mazda C lamp. Height to light source, 15 feet.

PLATE NO. 290. STANDARDS ESPECIALLY SUITABLE FOR LIGHTING OF PARK DRIVES

[1] These specifications have been adapted from those given in a paper presented by Mr. D. L. Gaskill before the Ohio Electric Light Association, July 1921.

the contract shall be awarded for electric lighting under these specifications shall be ten years from and after .....

4. *Work at contractor's expense.* All labor, apparatus, poles, brackets, wires, incandescent lamps or other type of lamp which may be adopted, fixtures, reflectors, fittings, connections, globes and appurtenances of every kind and every description necessary for the lighting of the park by electricity under these specifications shall be furnished by and at the expense of the contractor and shall remain his property after the expiration of the contract. He shall supply all electric current and labor of every description for supplying said lamp with electricity and for maintenance and repair of every kind, the intent and meaning of these specifications being that the city shall be at no expense at any time beyond the sum provided to be paid in the contract as drawn in conformity with these specifications, namely, a fixed price per lamp per year for the various types of lamps and hours of service.

5. *Hours of burning.* The lamps provided for in these specifications shall burn from dusk until daylight on every night in the year during the entire period provided in these specifications.

6. *Number of lamps.* The number of lamps contracted for is as follows: ..... series incandescent mazda C electric lamps of 400 candle power, present trade rating, ... series incandescent mazda C electric lamps of ..... candle power, etc.

7. *Description of illuminants.* The series incandescent lamps herein specified shall be mazda C series lamps of 400 candle power, present trade rating, having a total light output of 4,000 lumens. They shall be well made and reasonably free from defects and imperfections so as to meet the conditions of the street lighting service satisfactorily.

8. *Maintenance.* Lamps, reflectors, refractors and apparatus used in the lighting of the streets and other public places shall be properly cleaned at least three times a year, and maintained in such condition as to insure satisfactory lighting. All lamps, glassware or reflectors broken, or lamps burned out, shall be promptly replaced or renewed.

9. *Improvement in the art of electric lighting.* In view of the possible improvements in the art of electric illumination, the city or the contractor may desire the substitution of improved illuminants or accessories, and

Octagonal Reflecto-Lux Junior Lantern with stippled glass panels, parabolic reflectors and cast iron standard, Design Arcadian C, made by the George Cutter Works of the Westinghouse Electric and Manufacturing Company, 4,000 lumen (400 c.p.) mazda C lamp. Height to light source, 13 feet.

Form 12 Novalux Unit with No. 123 light alabaster rippled glass globe, canopy and dome refractor, made by the General Electric Company. Union Metal Manufacturing Company pressed steel standard, Design No. 1537, 4,000 lumen (400 c.p.) mazda C lamp. Height to light source, 13½ feet.

Form 25A Basket Type Novalux Unit with light alabaster rippled glass globe and dome refractor, made by the General Electric Company. Union Metal Manufacturing Company tubular steel standard, Design No. 1360, 4,000 lumen (400 c.p.) mazda C lamp. Height to light source, 16 feet. Length of bracket arm, 4½ feet.

PLATE NO. 291. SMALLER UNITS USED ELSEWHERE IN THE PARK

in making such a substitution it is the intent that the city and the contractor shall share equally in the benefits of such improvement. If the city and the contractor cannot readily come to an agreement on the terms of such substitution which shall afford an equal share of the change to the city and the contractor, the subject shall be submitted to arbitration as hereinafter provided.

10. *Additional lamps.* The contractor will understand that the number of lamps hereinbefore referred to is the minimum to be supplied during the life of the contract and that the city reserves the right to increase this number as needs require. The city shall give notice in writing of any additional lamps required and the contractor shall be allowed a reasonable time in which to place such lamps in service. All additional lamps shall be of the same type and character as those herein referred to and shall be erected, operated and maintained in the same manner as those already installed.

11. *Outages.* The city, through its police, shall make

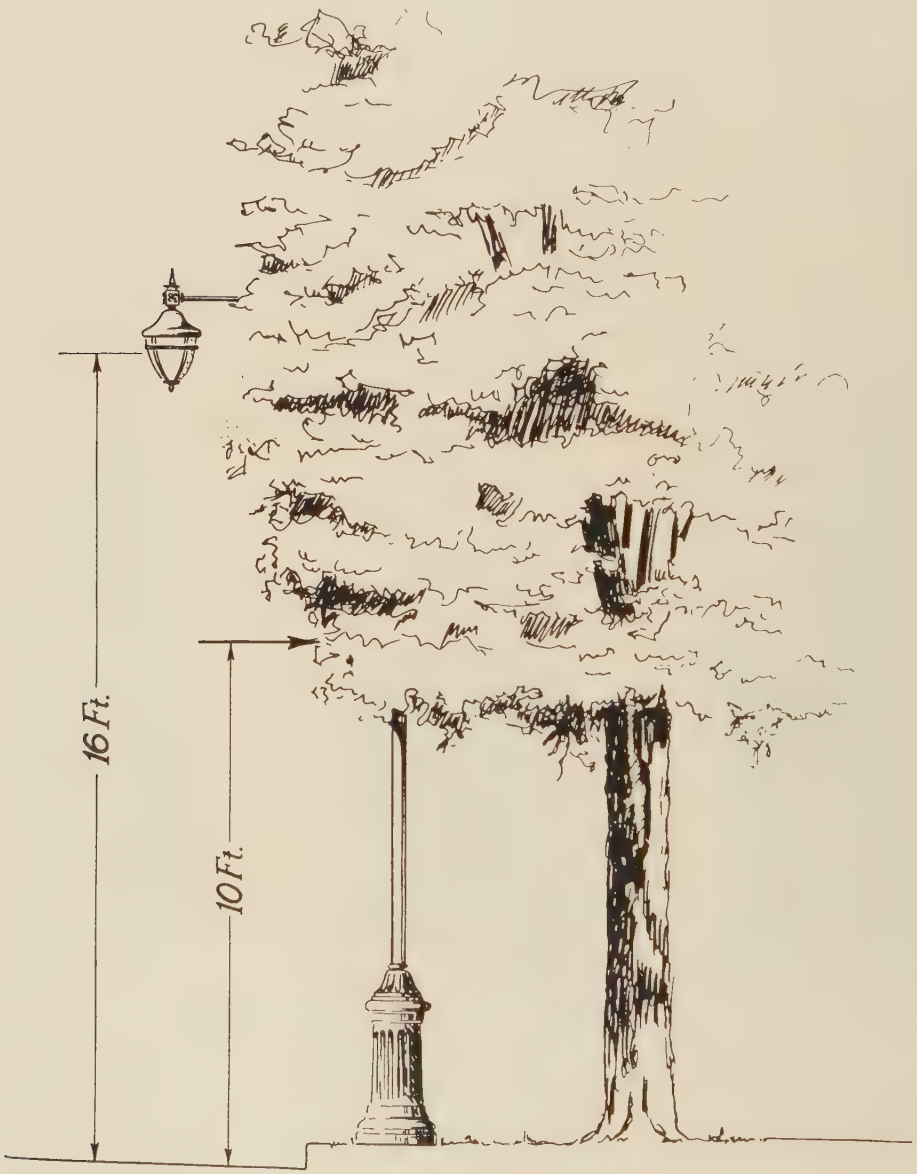

PLATE NO. 292. BRACKET ARM TYPE

The bracket arm type of standard is useful where foliage would otherwise obstruct the light.

a report to the contractor on the morning following the outage of any outage noted and in the case of said mazda C series lamps becoming extinguished when the same should be burning, then and in such case such contractor shall permit and the city shall deduct for each 400 candle power mazda C lamp ..... per hour for the time that such lamp is not burning when it should be burning. No deductions for outages shall be made when the same is due to causes beyond the control of the contractor. In case said contractor shall cause to be lighted any incandescent lamp within one hour after notification of the outage by the police department, then and in such case no record of such outage shall be kept nor any deduction made therefor.

12. *Current supply.* The current in each circuit shall be held at such a volume as to supply the right current to the lamps.

13. *Present status of system.* It is understood that the present park lighting system, including the location of lamps, shall be a basis upon which the contract is to be based, and any change in said location shall be restored by said contractor after the completion of his work to its original condition in so far as the same is practicable.

PLATE No. 293. STANDARDS

Standards should be placed on the outside of the curve, to eliminate confusion, and to clearly define the drive.

14. *Provision of arbitration.* In case of a disagreement between the city and the contractor as to any of the provisions of the specifications or contract, this argument shall be settled by a board of arbitrators appointed in the following manner: one member shall be named by the city, one by the contractor and these two jointly to name the third, and the three members shall constitute the board of arbitrators. All the testimony with regard to the subject under disagreement shall be submitted to the board of arbitrators, and, after a full hearing, at which all parties have a right to be heard, the majority decision shall be binding upon the said city and the contractor. The board of arbitrators shall have the authority to assign the costs of the arbitration in accordance with the verdict.

Floodlighting

Floodlighting is such a special form of illumination that it is impossible to cover the subject except in a very brief way, listing its possibilities and mentioning some very general rules. Some of its more outstanding uses are in connection with the lighting of monuments, waterfalls, fountains, public buildings, statues, pageants, domes, arches, memorials, shrubbery, trees and flower beds. It also finds wide use in the night lighting of outdoor sports, to be discussed in the following section.

The illumination of statues and monuments must be such that the play of light and shadow will be in harmony with the effect desired by the designer, while wherever floodlighting is to serve a strictly utilitarian purpose, such as in outdoor sports, parking spaces and the like, uniform illumination and freedom from deep shadows are essential.

It is well to remember the fact that the brightness of a lighted object depends upon the amount of light it reflects. That is, the amount of light that makes a very white building appear brightly lighted at night, would be much too small for, say, a red brick building of the same size. In other words, the darker the object, the greater amount of light that will be required. There are a number of good floodlighting units on the market which, if used in accordance with the recommendations of the manufacturer, will produce very satisfactory results.

Lighting for Sports

Outdoor sports lighting, though still a novelty in some respects, has passed the experimental stage and has an established position among real practical applications of the art of illumination. Outdoor lighting for activities of a recreational nature may be divided into two classes: (1) the lighting of standard courts and (2) the lighting of large fields (each class of which presents a different aspect of the lighting problem).

On standard courts, while the illumination requirements in many cases may be severe, the activities are confined within definite limits, so that the engineer can at once choose the proper lighting equipment and designate the locations for this equipment which will give a satisfactory distribution of light, and not interfere with the playing. Tennis, volley ball,

roque and horseshoe-pitching courts are examples of definitely bounded playing areas.

In the lighting of large fields, or areas on which activities are not confined within definite bounds, the problem becomes more difficult and oftentimes is peculiar to each individual project. The lighting of fields for football and track meets, and the lighting of playgrounds and bathing beaches fall in this category.

The problem of lighting for outdoor sports clearly resolves itself into one of so choosing and locating the lighting units that ample illumination is obtained at the place or places where it is needed, with the minimum of shadows and spottiness on the playing area. At the same time the supporting standards must be located well out of the way of the players and so arranged that glaring light sources do not defeat the purpose of the installation.

PLATE NO. 294
THE RLM STANDARD DOME REFLECTOR

PLATE NO. 295
DEEP BOWL SPUN ALUMINUM REFLECTOR

PLATE NO. 296
TYPICAL ANGLE REFLECTOR

PLATE NO. 297
WIDE BEAM FLOOD-LIGHT PROJECTOR

THE LIGHTING EQUIPMENT

The choice of suitable equipment for outdoor lighting depends upon the characteristics of the lighting fixture and how well it meets the requirements of any particular application. There are four types of lighting equipment generally used for outdoor lighting. These are discussed briefly here:

RLM standard dome reflectors. The reflector shown in Plate 294 is widely used for industrial lighting, and is recommended for many outdoor applications because of its high efficiency and design which give a favorable distribution of light downward at useful angles. It is made of enameled steel, is durable and rugged. This type of reflector is recommended in most cases for overhead lighting of areas, where the reflectors can be mounted on poles or suspended from cables at frequent intervals. RLM reflectors give a high degree of illumination on horizontal surfaces. White bowl lamps should be used with the RLM reflectors so as to prevent excessive glare from the bright lamp filaments.

Deep bowl reflectors. Deep bowl reflectors, such

as shown in Plate 295, are particularly recommended for lighting tennis courts. The large shielding angle effectively conceals the brilliant lamp filament from the direct view of the players who, by necessity, must frequently look upward toward the units. The distribution of light is such that these units do not have the general applications of the standard RLM reflectors.

Angle reflectors. Angle reflectors of the type shown in Plate 296 naturally suggest themselves when the problem is one of lighting a small playing area with units along the sides. These units direct the light efficiently to such an area, but where the nature of play requires vision at upper angles it is impossible to avoid the blinding rays of the units. Consequently their application is limited. For certain sports, such as hockey, where the play is carried on close to the ground, angle reflectors are applicable when mounted well above the angle of vision.

Floodlights. All large areas, such as football fields, bathing beaches, trap shooting ranges, and the like, require floodlights to meet the severe and variable conditions. For such application, obviously, other types of equipment cannot be used because of the wide angles through which the light must be directed. The fact that these areas, in general, must be free from obstructions necessitates the projection of the light from a distance. Floodlights are made in various sizes and have different characteristics as regards beam spread. Usually, a wide beam projector, such as is shown in Plate 297, is best adapted to meet these requirements.

Location of lighting equipment. The success of any lighting system involves many factors, such as adequate illumination, efficiency, general appearance, and lack of glare, shadows and spottiness. But, in the final analysis, all of these are regulated largely by just two things, namely, the lighting equipment (reflector and lamp) and the location of this equipment.

Having determined the type of reflector to be used, the proper location and number of fixtures become of signal importance. It should be remembered that each type of lighting equipment gives a certain characteristic distribution of light, and for this reason can be depended upon to light only a definite portion of the territory. When the fixtures are too far apart the lighting will be uneven, and shadows pronounced. The higher the fixtures are mounted, the fewer will be required, although larger lamps must then be used.

In floodlighting, the location of the lighting groups is chosen to give uniformity of distribution and to avoid glare and long, sweeping shadows. The recommendations given in Table A for lighting the different outdoor recreational grounds will provide sufficient light for the full enjoyment of the sport. Any modifications which suggest themselves should be made only with the knowledge and understanding of the influence of all the various factors upon the success of the lighting system.

TABLE A. LIGHTING NOTES ON OUTDOOR SPORTS

Sport	*Number of Units*	*Lamp Size*	*Spacing*	*Mounting Height*	*Type of Unit*	*Location of Units and Special Remarks*
Tennis	At least ten units per court	1500-watt	20 feet	30 feet	Deep bowl	If courts are to be used for championship matches, 2500-watt lamps should be used.
Bowling on the Green	Ten units for six rinks	750-watt	40–45 feet	20 feet	Elliptical angle reflector	Units placed five feet from the edge of the green.
Hockey	Six to twelve, depending upon rink size.	1500-watt	40–60 feet	30 feet	Angle reflector	Evenly spaced along two sides of a large sized rink. (100 x 200 feet.) If rink is of medium dimensions (112 x 58 feet), three 1000-watt units on each side will be adequate. Units should be mounted far enough outside rink so melting snow or ice does not fall on rink.
Volley Ball	Six	1000-watt White Bowl	7 feet from sides, 30 feet apart	20 feet	RLM Dome	Use 4½-foot bracket arms on poles.
Roque and Croquet	Four	500-watt White Bowl	36 feet	16 feet	RLM Dome	End units placed 12 feet from end boundaries. Use 4½-foot bracket arms.
Horseshoe Pitching	Two units for each four pits	200-watt White Bowl		10 feet	RLM Dome	Supporting pole is placed behind and midway between two adjacent pits Use 6-foot bracket arm.
Race Tracks	Depends upon size of track.	1000-watt	100 feet, on inside of track.	30 feet	RLM Dome	Placed on inside of track. Use 12-foot bracket arms.
Bathing Beaches	Depends upon area to be lighted.	1000-watt	400 feet between groups of units.		Flood-lighting	Recommended method employs 25 watts per linear foot of beach.
Football Fields	About 15 floodlights per tower. Four towers.	1500-watt		At least 70 feet	Large flood-lighting	Distance from a group of floodlights to playing field should not exceed 100 feet. Towers arranged systematically.
Indoor Baseball	Two field towers carrying six units each, and two infield towers, two units each	1000-watt	See Remark	35 feet	Flood-lighting	Two poles, each carrying two floodlights, are mounted on the continuation line between first and second base, and between second and third base, respectively, 20 feet back from the foul line; 150 feet from home plate two other poles, carrying six units each, are mounted two feet from the foul line.
Trap Shooting	Four projectors	1000-watt	See Remark	20 feet	Flood-lighting projectors	Units located 18 yards behind the shooter's stand. Reflectors to be so directed that course of clay pigeons is clearly illuminated.
Average Swimming Pools	Depends upon size of pool	750- to 1000-watt	30–40 feet	20feet	RLM Domes	Symmetrically spaced over pool area

Tennis Court Lighting.

Since tennis is so universally played, the advantages of night playing are perhaps greater and the benefits are more far-reaching for this than for any other single sport. For this reason and because of the large number of details involved, complete specifications for lighting are given.

The plan for the lighting of single tennis courts is shown in Plate 298. Five 1,500-watt clear mazda lamps mounted thirty feet above the ground should be used on each side of the court, each lamp equipped with a deep bowl aluminum reflector and skirt, as shown in Plate 299. Where two or more adjacent courts are to be lighted, the units should be located as shown in Plate 300. Five 1,500-watt clear mazda lamps mounted thirty feet above

the court, each lamp equipped with a deep bowl reflector and skirt, are to be used along the outside edges of the end courts. The row of units between

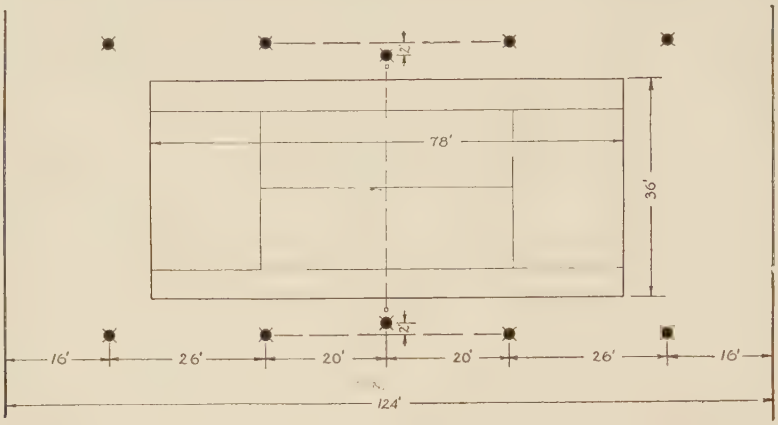

Plate No. 298. PLAN VIEW OF LIGHTING SYSTEM FOR A SINGLE COURT

courts should consist of six 1,500-watt clear mazda lamps spaced as shown, and mounted thirty feet above the court, each lamp equipped with a deep bowl reflector, without skirt. These systems will provide a level of illumination entirely sufficient to enable a high class type of tennis to be played.

Plate No. 299

Skirts fastened on the outside rows of reflectors increase the amount of light on the court.

In choosing a method of supporting the lighting units, a minimum first cost combined with easy maintenance are, of course, the principal factors to be considered. A system such as is shown in Plate 301 will adequately meet these requirements. The rigid bracket arms allow the use of disconnecting hangers, thus simplifying cleaning operations, lamp replacements and removal of equipment for storage during the winter months. The rigid support for the reflectors also prevents the units from swinging and rotating in the wind and thus eliminates the glare and uneven illumination which might otherwise obtain. A list of the material necessary for the construction of this system is given in Table B.

The current supply for the lamps may be either by underground or overhead wiring, depending upon local conditions. Where more than one

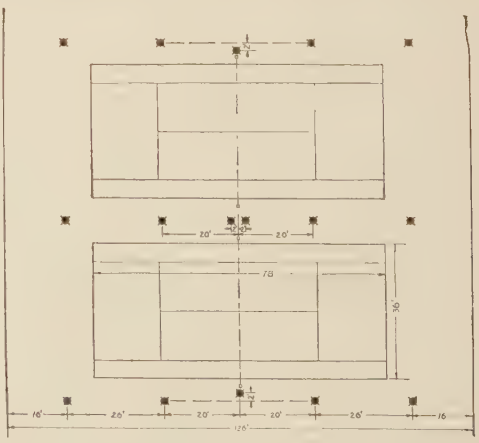

Plate No. 300

PLAN VIEW OF LIGHTING SYSTEM FOR TWO OR MORE ADJACENT COURTS

adjacent court is to be lighted, each row of lighting units should be controlled separately by means of a switch placed conveniently on one of the poles so that units not needed may be turned off. In some instances the units have been supported by means of a steel cable stretched between

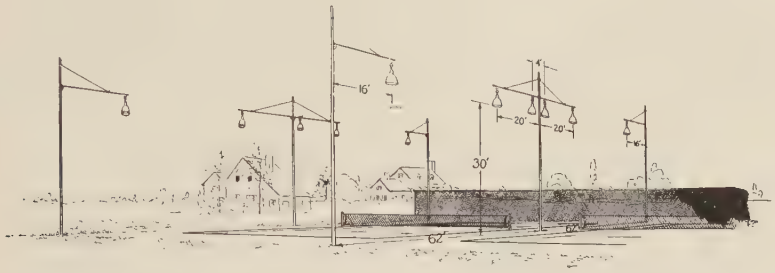

PLATE NO. 301

VIEW OF TENNIS LIGHTING SYSTEM SHOWING AN OUTSIDE AND MIDDLE ROW OF LIGHTING UNITS

poles, two or three poles per string of units being used. To prevent the reflectors from swaying in the wind, it is necessary to stretch a small wire between the poles and attach it to the rim of each reflector. Obviously, a disconnecting hanger cannot be used, so that the maintenance of such a system is not as easy as in the case of the one recommended above.

TABLE B. MATERIAL NECESSARY FOR ONE ROW OF UNITS

Poles. Three 45-foot wooden poles set six feet in the ground.

Bracket arms. Two 16-foot bracket arms; two 20-foot bracket arms; one 2-foot bracket arm. This is to be omitted when ordering for a row between adjacent courts. (On the row of units between courts the two center reflectors are attached to the 20-foot bracket.)

Lighting units. Five 1,500-watt or 2,500-watt mazda C lamps (six required for a row of units between courts); five deep bowl spun aluminum reflectors, such as the Ivanhoe No. 865 (six required for a row between courts); five aluminum reflecting skirts, such as the Ivanhoe No. 867. (Omit this item when ordering for a row between courts.)

Accessories. Five disconnecting hangers, such as the Thompson No. 94A (six required for a row between courts); five pulleys (six required for a row between courts); 215-foot steel chain and fittings. Add 60 feet when ordering for a row between courts; one 100-ampere switch.

SECTION II

THE ILLUMINATION OF PARKS, PARKWAYS AND PLAYGROUNDS[1]

Desirability. The desirability of adequately illuminating all public grounds which are open to use during the period of darkness is unquestioned. The intensity to which such grounds should be illuminated is dependent upon the service which such areas are intended to give. Unfor-

[1] The data herewith presented is the result of a year of painstaking study, preparation of plans and estimates, and testing out of different lighting units by the engineers of the Department of Parks, Minneapolis, Minnesota. The data was originally published in *Parks and Recreation*, Vol. IX, No. 2, May–June 1926, pages 542–551.

tunately and too frequently the actual intensity and uniformity of the illumination of public grounds is based upon the ability of the administrative department to provide funds for installation and maintenance.

In the case of the Minneapolis park system, it is assumed that sufficient funds will in due time be made available for a proper and adequate installation, and careful consideration as to the benefits to be derived has formed the basis of the intensity of illumination to be desired and the consequent cost of maintenance.

Benefits. The benefits of adequate illumination are assumed as follows:

1. Light is a most efficient policeman. If the large recreational areas under the administration of the board are to be open for public use at night, they must be properly policed. The cost of the prevention of crime and disorderly conduct will be much reduced and the efficiency of the police service much increased if these recreation areas are properly illuminated.

2. Light provides safety to vehicles and pedestrians alike. The parkway system is a part of the major highway system of the city, providing in many instances the shortest and least congested route between all the outlying parts of the city and from the Lake District to the business district.

The paving of the parkways has greatly increased their use for all light and passenger traffic, the roadways often being used to capacity during summer evenings. Safety to this growing traffic and to the pedestrians traversing or crossing the boulevards can only be assured with adequate illumination. At the present time the boulevards are more poorly lighted than our residential streets.

3. Light will increase the periods of service and the intensity of use of all the parkways and recreational areas. These areas developed at large expense can now be used only during the hours of daylight. Adequate illumination will extend this period of service and accommodate the people during their leisure hours, thus giving a greater return on the investment.

4. Light will add to the attractiveness of the park system. Not the least of the reasons for the development of the park system has been the desire to beautify the city, and the appearance of the park areas under illumination will add to this asset.

Specifically adequate illumination will discourage disorderly conduct, will give safety from stumbling, collision, attack and burglary; will permit recognition of people and objects; will add to the sense of security and enhance the appearance of the public grounds.

Current and distribution. Contemplating a modern electric lighting system for the park areas, we find that electric current can be furnished to the city at reasonable rates by the local utility company, and that it can

be delivered readily through its existing transmission system, as required in any park area. The problem under consideration then becomes the generation and source of light and its utilization so as to produce efficient illumination.

Considerations in Design of the Lighting System

1. Intensity of Light (foot candles).
   - (*a*) Efficiency of lamp.
   - (*b*) Efficiency of glassware.
     1. Inaccessibility of dirt and dust.
     2. Ease of cleaning and replacing.
     3. Unbreakableness.
     4. Cost of glassware and its replacement.
   - (*c*) Appearance by night and also by day.
2. Standards.
   - (*a*) Appearance.
   - (*b*) Strength.
   - (*c*) Freedom from dirt and rust.
   - (*d*) Safety to public in case of collision.
   - (*e*) Cost of standard and its replacement.
3. Brightness of Area Illuminated.
   - (*a*) Spacing and height of standards.
   - (*b*) Reflection or absorption of road and other surfaces lighted.
   - (*c*) Visual angle between lamps and surface.
   - (*d*) Eye discomfort and glare.
   - (*e*) Uniformity of illumination along street.
   - (*f*) Contrasts produced on street surface and on objects on the street.
   - (*g*) General effect and appearance.
4. Reliability of Manufacturer.
5. Experiences of Other Systems.
6. Cost of Current and Maintenance.

Fixed installation factors. Many of these factors are fixed by the conditions which exist in the park system and are not subject to change.

1. Spacing of light units. In most instances on the parkways, this spacing is influenced and predetermined by the street intersections. These intersections occur almost without exception at distances of either 330 feet or 660 feet, and as it is necessary for purposes of economy to place lighting units at the intersecting streets, so as to avail ourselves of the opportunity to light the intersecting thoroughfare as well as the parkway, the spacing of the lights becomes an economical division of these units. For reasons herein explained, the average spacing adopted is 150 to 200

feet. In the lighting of the parks and playgrounds, the location of standards is dependent upon physical features such as trees, walks, water areas, playground equipment, etc., and no fixed spacing can be adopted.

2. Arrangement of lights. Because of the spacing selected as above and fixed by the distance between street intersections, a staggered arrangement of lights is in most instances necessary to avoid interference of the shade trees planted along the roadways.

3. Heights of mounting. It has been determined by careful study and tests that the height of mountings should be about one-eighth of the distance of spacing, making the heights and spacings as follows:

Heights of Standards	*Distance between Standards*
10 feet	80 to 90 feet
15 feet	120 to 130 feet
18 feet	140 to 150 feet
20 feet	160 to 170 feet
23 feet	185 to 200 feet

These mounting heights are, however, subject to regulation on account of trees, which may interfere with such uniform height of mountings and consequently their spacing. The mounting heights in playgrounds depend entirely upon existing physical features.

4. In general, all park roadways are 32 feet in width and the parkway designs are such that a future width of 40 feet is the maximum obtainable. This factor determined the location of the lamp standards relative to the curb line.

5. A standard type of pavement has been adopted by the board. This pavement, known as bituminous macadam and so constructed as to have at all times an appearance similar to a gravel road, without perceptible reflection of light or creation of reflected glare, does not assist in adding to the brightness of the street and influences the selection of types of glassware.

6. Parkways in residential sections as a rule have front lawns and gardens with buildings set back quite a distance so that they will not reflect light and assist in intensity of illumination.

Determining factors. These factors and the general effectiveness of the illumination will be determined.

1. Location of light relative to roadway.
2. Width of roadway.
3. Nature of pavement or reflecting areas.
4. Proximity of buildings.
5. Spacing of lights (distance between standards).

6. Arrangement of lights (staggered or parallel).
7. Height of mounting.
8. Intensity of illumination.
9. Distribution of light:
   Horizontal plane.
      (*a*) Reflectors.
      (*b*) Symmetric refractors.
      (*c*) Asymmetric refractors.
   Vertical plane.
      (*a*) Free light.
      (*b*) Reflector.
      (*c*) Refractors.
10. Type of standards and glassware.

The intensity required for playground illumination is entirely dependent upon the demands of the activities to be carried on, whereas the intensity required for park lighting will be the minimum which will permit discrimination of objects.

The uniformity of light desired is a disputed question, some preferring an illumination sufficiently uniform to almost dispense with shadows, whereas others claim that good lighting is dependent upon shadows and silhouettes.

Intensity, uniformity and absence of glare are matters that can be measured, but the final decision is dependent upon the human equation and the resultant effect on the public in general.

The following conclusions were reached after a number of these investigations:

1. Large lighting units of sufficient mounting height to avoid excessive glare and spaced as far apart as is consistent with the intensity and uniformity desired are more efficient, more economical and more desirable than many small, low-mounted units placed close together.

2. That 1,000-candle power lamps approximately 23 feet high and spaced 200 feet apart produced the most satisfactory illumination for a parkway of straight alignment, provided interference of shade trees could be avoided.

3. That asymmetric refraction was desirable.

4. That for the conditions of a test to be made on our own park system, where the fixed factors which will govern this ultimate selection prevail, the lights should be mounted approximately 21 feet high, at spacing of approximately 165 feet, so as to conform to intersection requirements; the lights should hang over the edge of the roadway so as to clearly define the curbs; and that various types of light and refracting glassware should

be tested and demonstrated so as to ascertain the most pleasing effect with intensities of from 0.05 to 0.2 foot candles and uniformities of approximately 8 to 1.

Testing and demonstrations. In the illumination of the park and parkway system and the selection of a proper installation, the following parties were interested:

1. The board of park commissioners, responsible to the public for the service to be given and its cost.

2. The City of Minneapolis, which through its city council is confronted with a similar problem on residential streets.

3. The Minneapolis General Electric Company, which will furnish electric current and maintenance service.

4. The manufacturers of lighting equipment.

In consideration of all parties interested and in order to make tests of the qualities of the different lighting fixtures and equipment now on the market, also to experiment with the efficiency of the different heights of mountings and for the purpose of demonstration to the board and all others interested in the subject, test lights were erected on a section of St. Anthony Boulevard and experiments conducted for several months.

Installation. All units were installed in the positions which they would likely occupy in actual performance on the parkways.

Twelve temporary lighting poles were installed on the parkway at equal spacings of 156 feet, every other pole being on the same side of the roadway. On each pole was placed a pendant unit and an upright unit.

Poles were placed two feet back of the curb line and pendants were hung on five-foot bracket arms with arrangements for varying heights.

A long arm was used, as this was necessary in case of actual installation on most parkways, due to the interference of tree foliage.

Upright units were mounted at a height of 15 feet, the highest practical mounting height considered to be good practice for such units.

Pendant units were tested at 18½ and 21 feet, 18½ feet being the lowest that gave desired uniformity and elimination of excessive glare, and 21 feet the maximum height that could be used on the parkways on account of the shade trees.

All pendant units were on one circuit and all upright units on another. A 6.6 ampere constant current series circuit was taken out of a tub transformer which was across a 2,300-volt line leading to the St. Anthony Golf Building.

Each circuit was operated by a double-throw switch across the secondary from the transformer.

All readings were taken with a Macbeth Illuminator along the center

line of the roadway at points opposite lamps and at quarter points between lamps. Horizontal illumination and a test plate on the surface of the roadway was the basis of all readings.

Conclusions from demonstrations. A study of the records and summary of the readings made will show that having certain fixed and unchangeable factors relating to mounting heights, spacing, reflecting powers of pavement and lack of reflection from adjacent buildings, we selected for demonstration those luminaires which would give a fair average of intensity consistent with our requirements, but which at the same time presented a considerable range in uniformity. Varying in uniformity from 4.3 to 1 to 32 to 1, the lighting fixtures demonstrated were selected from commercial products of reasonable cost, any of which are and will be available for use.

As previously stated, intensity and uniformity can be and were measured, but "effective illumination" is a matter of human reaction determinable by observation not of one, but of many.

We appreciated that the illuminant to be chosen for boulevard lighting must give a satisfactory distribution of light on the road, an acceptable uniformity or ration of maximum to minimum foot candles on the road surface so as to eliminate eyestrain, and a high minimum between standards so as to provide adequate illumination at this point. What is effective illumination, however, must be decided by observation and the demonstration permitted us to receive from those concerned definite opinions as to:

1. Lack of glare, or interference of source of light with illumination on roadway.
2. Visibility of curb lines.
3. The visibility of objects on the sidewalks.
4. The visibility of objects on the road.
5. The ease of discrimination by direct illumination.
6. The ease of discrimination by silhouette.
7. The general appeal of the various units and the illumination produced on a part of the boulevard where all of the fixed factors prevailed.

The general consensus of opinion, after repeated viewing under different conditions of weather, and both with and without traffic on the thoroughfare, was:

That the mounting height of 21 feet was the most acceptable, because of freedom from glare and ease of discrimination on sidewalks and roadways.

That because of ease of discrimination both by direct illumination and by silhouette and because of general appearance and pleasing reaction, the General Electric Company No. 25A with asymmetric refractors and the Westinghouse Company Multilux with Holophane Superlux refractors were the most satisfactory.

A comparison of the readings taken on these two installations will show a similarity which explains the dual selection of satisfactory illumination.

The general tendency of both of these units mounted on 21-foot standards is toward a uniformity which will relieve eyestrain, but with sufficient variation between maximum and minimum intensity at a spacing of 156 feet to create a silhouette effect desired by some observers.

The tendency of the General Electric unit is to a higher maximum and higher average intensity with a greater amount of illumination from the same source, whereas the Westinghouse unit produces a slightly higher minimum intensity and a more uniform distribution of light.

In the opinion of the observers, both installations satisfied in this location the conditions previously mentioned as requisites of a well-designed lighting system and produced effective and pleasing illumination.

The glare due to the high intensity of lamps used in the low mounting heights could be diminished by using lower candle power lamps. This, however, would require a closer spacing of standards in order to get the required average and minimum intensity, and because of the cost involved, it was not considered practicable for boulevard lighting.

Park and playground lighting. Experience in the lighting of our own parks has demonstrated that high intensity of illumination in the parks is not necessary or desirable and subsequent recommendations are based on providing only sufficient light for discrimination of object. Because of the winding walks and irregular features of the parks and the low-hanging foliage, it is necessary to use small sized lamps of low mounting height and comparatively close spacing.

The design of the playground lighting contemplates providing sufficient illumination for ordinary activities such as lawn games, gymnastics, football practice, skating and such uses as do not require high intensity of illumination. No attempt has been made to light the tennis courts because of the large expense involved and the unsatisfactory results obtained by other cities. Special floodlighting equipment is desirable for bathing beaches and hockey rinks.

Recommendations

Lighting equipment. All conduits, transformers, standards, luminaires, and other equipment on park land to be the property of the board of park commissioners and to be purchased and installed by them, under contract or otherwise.

Electric service. All electric service to be furnished by the Minneapolis General Electric Company from present lines and necessary extensions in conformity with plans attached.

Maintenance. Cleaning and lighting and replacement of lamps to be done by the Minneapolis General Electric Company under yearly contract. Replacement of glassware, poles, transformers, and repairs to conduits to be done by the General Electric Company at cost plus a fixed percentage. Current to be paid for at metered or at flat rates as per pending agreement. The responsibility of maintaining the lighting system in efficient operation should be left with the utility company.

Installation

Electrical service. The distribution of energy for the lighting system of both parks and parkways shall be as recommended by the local utility company.

This consists of making use of the existing multiple system of distribution. Energy is fed into the system from the secondaries of transformers on existing pole lines in proximity to the proposed installations. All lighting circuits are three-wire with a grounded neutral. The two outside wires are standard N. E. C. lead-covered cable with a covering of asphalted jute for mechanical protection. The neutral is a weatherproof wire grounded and bonded to the lead sheaths of the two cables of each standard. Four hundred and sixty volts are impressed across the two outside cables with 230 volts from each side to the neutral or to ground.

In general, 6,000 lumen lamps requiring a current of 20 amperes and a voltage of 15.5 are to be used, and change in energy is to be effected by a transformer located in the base of each standard.

As in some cases, winter lighting will require service from alternate lamps only; a fuse in the base of each standard is to be provided for mid-winter cutout. The three-wire arrangement is also flexible in the control of lamps, permitting if desired midnight lighting only.

Standards for parkway illumination. Design. The standards shall be designed for a mounting height of from 18 to 23 feet, with bracket of sufficient length to extend three feet over the curb line.

Standards: Spacing, location, and mounting height. The standard shall be spaced from 160 to 200 feet apart, as conditions demand and as indicated on the accompanying plans. The mounting height of lamps shall be from 18 to 23 feet, depending upon varying conditions on different parkways. The standard shall be set two feet back of curb lines which with a five-foot bracket will permit a three-foot overhang of lamps.

Standards for playgrounds and parks. Standards for park lighting shall in general be placed along park walks at spacing of approximately 100 feet, these standards to be 12 feet in height. Playground standards shall be placed as indicated on the plans and in relation to playground equipment,

the mounting height varying from 15 to 30 feet. The 30-foot height is required for the lighting of skating rinks and playfields, in order to obtain uniformity with lights placed around the edge of the field.

Lamps and glassware. Park lamps shall be 150-watt multiple lamps encased in small Washington-type alabaster globes without refractors. This unit, designed for park lighting in Washington, D. C., has been very satisfactory.

Playground lamps shall be of the height and intensity as indicated on the various plans and shall be of the same type as designated for similar heights on parkways.

The 30-foot standards shall be equipped with 500-watt multiple lamp encased with General Electric Company No. 108 clear rippled globe. This type is now being used satisfactorily in the lighting of our playfields.

Parkway lighting shall be 4,000 or 6,000 lumen, 20 ampere series lamps for tip down burning, as indicated on the various plans.

Bowl refractors with a characteristic candle power curve similar to Holophane No. 4435 S. F., or No. 4238 S. F. are recommended.

The design of the dustproof hood shall be such that the refractor and hood will form a complete and symmetrical unit and harmonize with the design of the standard. The hood and refractor should be suitable for 4,000, 6,000 or 10,000 lumen lamps.

Upkeep. Items in upkeep charge (yearly):

(*a*) Maintenance and current.

(*b*) Depreciation reserve.

(*c*) Interest on investment.

Maintenance. The Minneapolis General Electric Company tentatively agrees to furnish current and maintain the lighting system for the board. Maintenance includes the following:

(*a*) Furnish all lamp transformers and control equipment.

(*b*) Turn lamps on and off.

1. Daily.
2. Yearly.

(*c*) Maintain lamps.

1. Replace burned out lamps.
2. Replace broken lamps.
3. Replace blackened and inefficient lamps.
4. Furnish all lamps for replacement.

(*d*) Maintain globes.

1. Clean globes.
2. Replace broken globes.

(*e*) Maintain standards and hoods.
1. Paint standards.
2. Paint hoods.

(*f*) Maintain system.
1. Shoot trouble.

Current includes the following:

(*a*) Furnish current for all lights.

(*b*) Regulate voltage for all lights.

Note. The General Electric Company excepts repairing any equipment injured under unforeseen conditions, from automobile accidents, from storms, and the like.

The charge for such maintenance and current will be made per lamp per year according to the following schedule:

A. STANDARDS AND GLOBES ON ST. ANTHONY BOULEVARD MINNEHAHA PARKWAY AND GODFREY ROAD

Standard	*Burning Schedule*		*Charge per Lamp per Year*		
	Yearly	*Nightly*	*For 400 c.p.*	*For 600 c.p.*	*For 1000 c.p.*
18.0′, 21.0′ 23.0′	All year	All night	$45.00	$50.00	$67.50
18.0′, 21.0′ 23.0′	All year	Midnight	38.75	42.50	55.00
18.0′, 21.0′ 23.0′	April 1 to October 1	All night	36.50	40.00	52.50
18.0′, 21.0′ 23.0′	April 1 to October 1	Midnight	32.50	35.00	47.50

B. STANDARDS AND GLOBES FOR PARKS AND PLAYGROUNDS

Standard	*Burning Schedule*		*Charge per Lamp per Year*	
	Yearly	*Nightly*	*500 W.*	*150 W.*
30.0′ Playground	All year	Midnight	$55.00	.....
30.0′ Playground	May 1 to November 1	Midnight	45.00	.....
30.0′ Playground	September 1 to March 1	Midnight	50.00	.....
30.0′ Playground	September 1 to December 1	Midnight	45.00	.....
12.0′ Park	All year	Midnight	.....	$27.50
12.0′ Park	May 1 to November 1	Midnight	.....	22.50
12.0′ Park	September 1 to March 1	Midnight	.....	25.00
12.0′ Park	September 1 to December 1	Midnight	.....	22.50

TABLE OF UNIT COSTS AS WELL AS TOTAL INSTALLATION COSTS FOR ALL LIGHTING PROJECTS

Location	*23o-Foot Standards with Bowl Refractors*	*21.o-Foot Standards with Bowl Refractors*	*18.o-Foot Standards With Bowl Refractors*	*30.o-Foot Standards with General Electric Globes and Dome Refractors*	*12.o-Foot Standards with Washington Globes and No Refractors*	*Total Cost*
St. Anthony Boulevard	$248.49	.....	.....	.....	.....	$45,963.06
Minnehaha Parkway	.....	$241.20	$236.00	.....	.....	62,657.19
Godfrey Road	.....	.....	240.39	.....	.....	5,528.95
Chicago Avenue Field	.....	.....	.....	$297.36	$220.00	6,416.21
Folwell Park	.....	.....	.....	253.20	185.00	10,204.85
George A. Brackett Field	.....	.....	.....	239.19	175.00	3,067.33
Linden Hills Field	.....	.....	.....	230.30	170.00	2,862.38
Mt. Curve Triangle	.....	.....	.....	.....	156.15	1,249.17
Nicollet Field	.....	.....	.....	299.22	239.20	8,614.96
Powderhorn Lake Park	.....	.....	.....	280.30	186.50	20,525.12
Bryant Square	.....	.....	.....	225.39	165.00	2,611.96
Sibley Field	.....	.....	.....	227.80	170.00	2,842.41
Average Cost	$248.49	$241.20	$238.20	$256.47	$185.20	$172,543.59

COST PER LINEAL FOOT OF STREET FOR PARKWAY LIGHTING

Parkway	*Total Cost*	*Length of Parkway*	*Cost per Lineal Foot*
St. Anthony Boulevard	$45,963.06	30,950.0 feet	1.48
Minnehaha Parkway	62,657.19	49,350.0 feet	1.27
Godfrey Road	5,528.95	3,480.0 feet	1.59

SECTION III

SAMPLE SPECIFICATIONS FOR SUPPLYING ELECTRIC CURRENT

SPECIFICATIONS FOR THE PARK DEPARTMENT, BALTIMORE, MARYLAND

Information for bidders. Sealed proposals in duplicate for supplying electric current to the Board of Park Commissioners, marked "Proposals for Supplying Electric Current to the Park Department," addressed to the Board of Awards, will be received at the office of the City Register, City Hall, in accordance with the specifications of the Board of Park Commissioners, which can be obtained at the office of the Park Board, Baltimore, Maryland.

General specifications. All bids are subject to the terms of the specifications of the Board of Park Commissioners, which are read into and considered a part of each bid. The Board of Awards reserves the right to reject any and all bids.

The successful bidder will be required to give bond in the usual form, in the amount of the contract, for the faithful performance of his agreement, and shall indemnify and save harmless the Mayor and City Council of Baltimore against any suit or suits, loss, damage or expense to which said Mayor and City Council of Baltimore may or might be subjected by reason of any default or negligence, want of skill or care on the part of the contractor, his agent or employees, in or about the furnishing and delivering of the primary electric current over the primary lines to and including the meter at all points of distribution included in this contract, and shall indemnify and save harmless the said Mayor and City Council of Baltimore against any claim or claims due to the using any

form of material or method of manufacture, process, composition or thing which is patented or claimed to be patented, except any claim because of the use of any equipment which the Board of Park Commissioners is to furnish under these specifications.

All proposals shall be accompanied by a certified check of the bidder for five hundred dollars, on a clearing house bank, drawn to the order of the Mayor and the City Council of Baltimore.

The successful bidder will be required to execute the contract and furnish bond within ten days of the date of award of contract. All checks, except that of the successful bidder, will be returned after the contract is awarded. The check of the successful bidder will be returned when satisfactory bond and contract is filed with the City Comptroller.

Whenever the surety or sureties on the bond so furnished shall be deemed by the mayor to be unsatisfactory, the contractor, within ten days after notice to that effect, shall furnish and deliver a new bond to the Mayor and City Council of Baltimore in the same penalty and on the same conditions with surety satisfactory to the mayor and this duty shall continue on the part of the contractor whenever and so often as the mayor shall require a new bond with satisfactory surety or sureties. If the contractor shall fail to furnish such bond within ten days after said notice is mailed to his address, the Mayor and City Council of Baltimore, through its proper agent or agents, may refuse to accept current under said contract and relet the contract at the expense of the contractor.

Specifications in detail. Under these specifications, the company shall furnish and deliver overhead primary electric current, except where the park is located in the underground district, to the following parks and squares: namely, Druid Hill, Wyman, Clifton, Patterson, Carroll, Fort McHenry, Latrobe, Broening, Hanlon and Easterwood parks and to Union, Franklin, Harlem, Lafayette and Perkins squares, and also to all other parks and squares or properties under the jurisdiction and control of the park board, as the latter may require from time to time, during the term of this contract; the said current to be the standard supplied in the territory in which the park is located. It may be alternating, twenty-five or sixty cycle, single or three phase, or direct current. In rating the voltage of each phase, twenty-four hundred volts will be understood as the basis agreed upon. The voltage variation shall be within the limit prescribed by the standard of the Public Service Commission of Maryland, set for electrical corporations in the state. Bids are desired for a period of three years, the Board of Awards reserving the right to accept such bids as it may deem to be to the best interest of the city.

In determining the number of phase to be installed at the above mentioned stations or future stations, it is to be understood that for all loads not exceeding twenty-five kilowatts, such current supplying the said load shall be single phase and for all loads exceeding twenty-five kilowatts, the said current may be three phase, with the consent and approval of the park board.

Demand. All demands shall be determined by actual measurement of the maximum loads, using suitable instruments which shall be furnished by the bidder and subject to the approval of the park board. The demand may be increased or decreased from time to time by the city, which shall so notify the bidder at least ten days in advance of making such changes. In determining the maximum load upon which the demand shall be based, momentary or abnormal peaks will not be considered. The interval over which the demand shall be averaged shall not be less than one-quarter of an hour, except for rapidly fluctuating loads.

The demand of the said parks and squares shall not aggregate less than two hundred and seventy-five kilowatts in any month.

Payments. The city will pay in monthly installments for the service and current delivered to the premises heretofore mentioned, also to all other premises as may, in the future, need supply. Such payments shall be based upon the monthly readings taken on or about the first of each month by the representative of the city and the bidder and no payment will be made until both parties agree upon the amount of service rendered.

Fixed charges. Under these specifications the bidder shall name a price per year, payable in equal monthly installments, which shall be charged per kilowatt of demand up to and including fifteen kilowatts and a price per kilowatt exceeding fifteen. In figuring the reduction in fixed charges, the kilowatt of demand will be taken at each station and fixed charges shall be determined at each station according to the load at the particular station.

Running costs. Bids are desired per kilowatt hour on the consumption set forth below and the successful bidder shall be paid the schedule rate, which rate shall be determined by the actual consumption at each station. On or about the first day of each month the consumption for the preceding month shall be ascertained by reading the instruments especially installed for the purpose. According to this consumption the bidder shall be paid for the amount of the current consumed at the rate fixed in the respective schedule by him within which the consumption for the month shall fall, and prices are desired and current will be paid for by the park department to the successful bidder according to the amount bid under the following schedules:

A. A price per kilowatt hour for all electricity furnished up to and including five hundred kilowatt hours per month.

B. First. A price per kilowatt hour for all electricity furnished exceeding five hundred kilowatt hours and

up to and including five thousand kilowatt hours per month.

C. Second reduction. A price per kilowatt hour for all electricity furnished exceeding five thousand kilowatt hours and up to and including one hundred thousand kilowatt hours per month.

D. Third reduction. A price per kilowatt hour for all electricity furnished exceeding one hundred thousand kilowatt hours per month.

Fuel rate adjustment. The net price for each kilowatt hour of electric energy supplied under this schedule shall be subject each month to adjustment by increase or decrease according to the average cost of coal as delivered to the coal bunkers at the company's generating plants. This adjustment is based upon changes in the cost of generating electricity by steam, due to changes in the cost of coal from a base price of five dollars per short ton, five dollars and sixty cents per long ton, and shall be taken at the rate of one one-hundredth cent per kilowatt hour for each nine cents per short ton, ten cents per long ton, change in the cost of coal. This adjustment shall be made to the nearest one-hundredth of a cent per kilowatt hour.

Note. The price of coal is filed monthly with the Public Service Commission of Maryland.

All meters, instruments, etc., used for the purpose of measuring the current supplied to the city shall be tested by the Public Service Commission, if in the opinion of the city, such meters, instruments, etc., are not correct and such tests shall be at the expense of the bidder. Demand and consumption shall be read by the representatives of the city and the contractor and agreed upon before any payment will be made. Payments under the head of running costs are in addition to payment under the head of fixed costs or charges.

It is understood that in determining the monthly payments due the bidder that the consumption in all the parks, squares and other areas under this contract, shall be added together, and on the basis of the aggregate consumption for all stations, the price to be paid for the current for the month shall be determined according to the schedule prices offered by the successful bidder.

On behalf of the Board of Park Commissioners.

Park Engineer.

Approved: Assistant City Solicitor.

Approved: President Board of Awards.

SPECIFICATIONS FOR LIGHTING BY ELECTRICITY THE PARKS, PARKWAYS, PLAYGROUNDS AND OTHER PUBLIC LANDS UNDER THE MANAGEMENT AND CONTROL OF THE BOARD OF PARK COMMISSIONERS OF THE CITY OF CINCINNATI

1. *Proposals.* Sealed proposals will be received at the office of the Board of Park Commissioners, 2005 Gilbert Avenue, Cincinnati, Ohio, until twelve o'clock noon of Thursday, the fourteenth day of May, 1925, at which hour bids will be publicly opened and read, for lighting by electricity the parks, parkways, playgrounds and other public lands under control of the Board of Park Commissioners of the City of Cincinnati for a period of ten years dating from and after June 1, 1925, and expiring June 1, 1935, the work to be done in strict accordance with this specification, and the plats on file at the office of the Board of Park Commissioners.

2. *Price per lamp.* Each proposal shall state the price per lamp per year in writing and in figures. Proposals shall be in strict conformity to this specification.

3. *Deposits.* Each proposal shall be accompanied by a certified check on any solvent bank in the City of Cincinnati, payable to the order of said city, in the sum of five thousand dollars, which shall be deposited with the Board of Park Commissioners, and the deposit of such check shall be a condition precedent to the opening of any such proposal, and no bid shall be given consideration which is not accompanied by such check.

4. *Forfeiture of deposit.* In case the bidder to whom the contract is awarded shall for a period of ten days refuse or neglect to enter into the contract on the basis of this specification, then in such case the money represented by the check shall pass to and become the property of the City of Cincinnati, not by way of penalty but as a compensation for the loss of time and expense incurred by the city as a consequence of such failure to consummate and execute the contract thus awarded; and the city treasurer of the City of Cincinnati shall thereupon endorse such certified check, collect the money represented thereby, and pay the same into the city treasury.

5. *Return of deposits.* The certified checks deposited by the unsuccessful bidders shall be returned immediately upon the award of the contract, and in case all bids are rejected, all such certified checks shall be returned forthwith. The certified check deposited by the unsuccessful bidder shall be returned immediately after he shall have entered into and executed the contract hereto attached, and given bond as required by this specification.

6. *Surety bond.* The bidder to whom the contract is awarded, and within ten days thereafter, will be required to enter into a contract in the form hereunto attached, and give bond in the sum of five thousand

dollars with an authorized surety, guarantee, or trust company, or companies, or by two or more resident freeholders of Hamilton County, Ohio, to the satisfaction of the Board of Park Commissioners, and in the form hereunto attached and marked Bond B.

7. *Assignment of contract.* Any award made, or contract executed hereunder, shall be absolutely unassignable, either by sale, transfer, or partnership agreement, except by and with the consent of the Board of Park Commissioners of the City of Cincinnati, but must be carried out and continuously operated by and for the benefit of the party to whom the award is made; and if at any time it can be shown that there has, either directly or indirectly, been any transfer, or that the party to whom such contract was awarded is not directly carrying out the same in good faith, and giving all the benefits and bearing all the responsibility of such operation, consent of the Board of Park Commissioners not having been given, then the contract shall cease and terminate and become null and void; and if so voided, the Board of Park Commissioners may proceed at once to advertise for proposals for a new contract, and shall order suit to be commenced for damages and for breach of said contract.

8. *Arbitration.* If in the opinion of the Board of Park Commissioners the contractor is violating any of the conditions of the contract made under this specification, or attempting to execute the same in bad faith, the board shall notify the contractor, and direct him to immediately remedy the defects or violations complained of; and if said contractor shall not within five days thereafter comply with all reasonable requirements of said Board of Park Commissioners, and take such measures as shall, in the judgment of said Board of Park Commissioners, insure a satisfactory performance of contract obligations, then said Board of Park Commissioners shall have the right to at once provide for lighting temporarily by means of any other illuminant any part or all of the territory embraced in said contract until a new contract shall be made by the proper parties; and any excess of cost or any damage to the Board of Park Commissioners caused by reason of such failure of the contractor to comply with the terms of the contract shall be paid to the Board of Park Commissioners by said contractor. Provided, however, that if the contractor under this specification shall claim he is carrying out his contract in good faith, and that there has been no delay on his part, said claim shall be duly investigated by a board of arbitration appointed in the following manner: One party to be named by the Board of Park Commissioners; one party to be named by the contractor; and these two jointly to name a third; and the board of arbitration so constituted shall have submitted to it all the testimony with regard to such claim of default, and after a full hearing at which all parties shall have the right to be present, the majority decision shall be final upon the Board of Park Commissioners and the contractor. The expense of such arbitration shall be equally divided between the Board of Park Commissioners and the contractor.

9. *Payments.* All payments made under the contract based on this specification shall be made upon the certification of the Board of Park Commissioners, or its designated agent, within the first five days of each and every month during the continuance of the contract. In case of any disagreement, or of any services rendered, or work done not provided for in this specification, no payments shall be made until all agreements regarding such work done or services rendered shall have been complied with, and the Board of Park Commissioners, through its agent, shall have given its certificate to this effect. Provided, however, said certificate shall in no wise estop or preclude the Board of Park Commissioners or any of its officers from showing a mistake therein as to the true amount of the lighting service.

10. *Indemnifying the city.* The contractor for this work shall indemnify and hold harmless the City of Cincinnati, the Mayor, the Council and the Board of Park Commissioners of the City of Cincinnati, against any and all claims which may be made by reason of any infringement of any patent right in the use of lamps, machinery or any other article, apparatus, or process which may be used in operating or maintaining the lamps under this specification; and shall also indemnify and hold harmless the City, the Mayor, the Council and the Board of Park Commissioners of the City of Cincinnati, its officers, agents or servants and each and every one of them, against and from all suits and actions of every name and description brought against the City of Cincinnati, the Mayor, the Council, the Board of Park Commissioners or any of its agents or servants; and also from damage and cost to which it, they or any of them may be put by reason of injury to the person or property of any other, resulting from negligence or carelessness or otherwise, in the performance of the contract, or from any improper or defective material, wire, cable, lamp standard, lamp, implements, or other appliances used in the performance of the same, or from any act or omission of said contractor for lighting, or of its agents or employees.

11. *Authority.* Whenever in this specification it is provided anything is to be determined, done or ordered, or any option is to be exercised by the board, or that anything is to be done to the satisfaction of, or subject to the approval of the board, it is understood that the Board of Park Commissioners shall so act.

12. *Tenure of contract.* The period of time for which the contract with the Board of Park Commissioners for electric lighting shall be awarded shall be for a period of ten years from and after the expiration of the existing contract, June 1, 1925.

13. *Scope of contract.* The territory to be lighted

by the contractor under this specification shall be the public parks, parkways, playgrounds, athletic fields, or any other public property under the management and control of the Board of Park Commissioners or which may come under its control during the life of this contract which the Board of Park Commissioners may see fit to light by electricity, excepting such playgrounds as are lighted during the summer months or playground season only.

14. *Zoning of city.* The territory in which all parks, parkways and other public lands to be lighted under this contract are located shall be divided into two districts, to be known as the Underground District and Overhead District respectively.

15. *Underground District.* The Underground District shall be the territory included within the following boundaries: Freeman Avenue, Liberty Street, Broadway, Eggleston Avenue, Third Street, Smith Street, Fourth Street, Baymiller Street and Seventh Street. Within this Underground District all lighting under this contract shall be supplied by, and all lamps receive their supply of electrical energy from underground wires, which shall be placed beneath the surface of the street in a system of tubes, ducts or conduits, built in accordance with the most modern and best accepted practice, in order that constant and uninterrupted service may be assured.

16. *Overhead District.* The Overhead District shall be the entire City of Cincinnati as it is now, or as it may hereafter be enlarged or extended, remaining outside of the Underground District, as above described. In the Overhead District all lamps, under this contract, shall be supplied with current by means of overhead wires. Such wires shall be equal in every respect to those used in furnishing current for the street lights of the City of Cincinnati.

17. *Arc lamps.* When arc lamps are specified under this contract, they shall be of the same type and equal in every respect to those used for lighting the streets of the City of Cincinnati. Whether iron or wooden poles are used for the support of wires or lamps their appearance shall meet with the approval of the Board of Park Commissioners and they shall be kept painted, maintained and replaced by the contractor. The location of all poles on park property shall be as directed by the Board of Park Commissioners.

18. *Unit prices for arc lamps.* Bidders shall submit a price per lamp per year for arc lamps in the Underground District and also a price per lamp per year for arc lamps in the Overhead District. The prices submitted shall include all renewals and replacement of materials, the cleaning of glassware, the painting of both iron and wooden poles, the furnishing of the necessary electric power and maintaining the equipment constantly in first-class operating condition.

19. *Tungsten lamps.* Tungsten lamps shall be of eighty-watt rating, equipped with radial wave reflectors and supported by iron brackets secured to the poles. The price bid for tungsten lamps per year shall include the furnishing and maintaining of all equipment and the necessary current for operating the lights.

20. *Parkway lights on city-owned equipment.* The parkways and park roads in the Overhead District are now lighted by means of incandescent lamps on cast iron standards. Such equipment is the property of the Board of Park Commissioners, but the bidders shall submit a price per lamp per year for each of three sizes of lamps to be used on such city-owned equipment, which price per lamp per year shall include the maintenance and replacement of all equipment and apparatus used in connection with such lights, including overhead and underground conductors, cast iron lamp standards, globes and lamps, and the Board of Park Commissioners shall be at no expense whatsoever for lighting on such city-owned equipment beyond the price bid per lamp per year. All such lamps shall be connected in series by an underground cable and the current for such circuit shall be supplied from the nearest overhead wires or the nearest manhole of the contractor. Replacements of lamp standards shall be of the same design now in use for such lights or of a design approved by the Board of Park Commissioners. The standards shall be set plumb upon a suitable foundation, the bottom of which shall be below the frost line.

21. *Danger signs.* The contractor shall, at such places as may be directed, provide lamps with genuine ruby globes or globes having a genuine ruby band of such dimensions as may be determined by the Board of Park Commissioners.

22. *Lamps.* All incandescent lamps shall be Edison Mazda C Class of candle powers specified. They shall be fitted with Mogul screw bases.

23. *Cleaning globes.* All globes shall be cleaned at stated periods at least every two weeks.

24. *Lamp renewals.* Lamps shall be renewed immediately when broken or burned out or when in the opinion of the Board of Park Commissioners any lamp has outlived its usefulness.

25. *Defective equipment.* Should any standard, transformer, wire, fixture, support or other appliance become broken, or at any time found to be in a defective condition, such break or defect shall be promptly repaired and remedied by the contractor; but no default on the part of the Board of Park Commissioners to require such repairs or remedy shall relieve the contractor of any responsibility in case of accident to persons or property by reason of such defective standard or other appliance.

26. *Current.* The current supplied for lights under this contract shall at all times be equal in amount and pressure to that furnished for the same type of lamp used by the City of Cincinnati for street lighting.

27. *Present installation.* The present installation consists of the following number of units:

Underground arc lamps	8
Overhead arc lamps	105
Eighty-watt tungsten on equipment not owned by the city	5
Eighty-watt tungsten on equipment owned by the city	57
One hundred candle power incandescent lamps on equipment owned by the city	91
Total	266

It is distinctly understood that the above number of lamps shall in no wise be considered a guarantee by the Board of Park Commissioners that it will use the exact number of lamps herein above set forth, nor shall the number so fixed be the limit to the number of lamps the Board of Park Commissioners may require. The above number is approximate and is given solely as a basis for computing the bids.

28. *Displacement of present lamps.* Should the bidder to whom the contract is awarded be at the time of making such contract already under contract with the Board of Park Commissioners for park lighting, then such new contract and this specification shall be construed as an agreement upon the compensation for the change of lamps and number thereof and the Board of Park Commissioners shall have the right to discontinue the lamps theretofore in use in the territory covered by such new contract and specification; the number of lamps discontinued to be thereupon deducted from any guaranteed number of lamps in any such existing contract.

29. *Extensions.* With the approval of the Board of Park Commissioners, at any time during the existence of this contract, the successful bidder shall be obliged to extend any part of this system of lighting, to be paid for at the same rate of compensation as may be hereafter agreed upon.

30. *Additional lamps.* The contractor shall install additional lamps when ordered to do so within ten days after receipt of the order. He must notify the board when such lamps are first lighted and include the price for such additional lamps in his monthly account to the board, billing for the fraction of a month such lamps as have been placed in service.

31. *Discontinuance of lamps.* The Board of Park Commissioners may during the term of the contract discontinue lamps, and the contractor, when ordered to do so, shall so discontinue lighting and remove his lamps within ten days after the receipt of the order. The contractor shall notify the board when lamps are discontinued and shall bill the board only for the fraction of a month such lamps were lighted during the month.

32. *Unit prices.* Bidders shall submit a unit price per lamp per year for each type of lamp as set forth on the proposal blank hereto attached. The prices submitted shall include the furnishing by and at the expense of the contractor, all labor and materials of every description for lighting the parks, parkways, playgrounds and athletic fields, etc., by electricity in accordance with this specification.

33. *Plats.* The successful bidder shall file with the Board of Park Commissioners a plat or diagram of each circuit, and shall from time to time as may be required by said board file an additional or amended plat diagram showing any changes that may have been made in the circuits, and the location and number of lamps on any or all circuits. Circuits thus shown shall be designated by numerals.

34. *Outages.* All lamps under this contract shall be lighted every night in the year during the entire period provided for in this specification, in accordance with the requirements of the street lighting schedule approved by the Council of the City of Cincinnati, July 23, 1906, which schedule provides for a total lighting per year for each lamp of 3,914 hours; provided, however, that no lamp shall be placed on any park property until the exact location thereof has been approved by the Board of Park Commissioners. All outages shall be immediately reported by the park police or caretakers by telephone to the contractor's central lighting station. The park employee noticing same shall keep account as nearly as possible of the number of hours any lamp is allowed to remain out, which outage shall be reported to the Board of Park Commissioners. The contractor shall be allowed one hour within which to relight any lamp or lamps so reported out, and if not relighted within said time a deduction from the current monthly bill rendered for electric lighting proportional to the time of outage exceeding one hour shall be made by the Board of Park Commissioners.

35. *Time of completion of installation.* The successful bidder shall, within thirty days after the award of the contract, begin work on this installation and have same completed and in operation within one year after the date of such award.

36. *Penalty for failure to complete installation.* Should the successful bidder to whom the contract has been awarded fail to complete and have the installation in operation within one year from the date of such award in accordance with this specification and the contract, strikes and unavoidable delays excepted, then in such case the contractor shall pay to the Board of Park Commissioners a sum computed on the basis of the contract rate per lamp per year for each lamp ordered installed under the terms of this contract and not in service and in operation on and after said date, such payment to the board for each lamp to be made for the full period of time and until such lamp shall be placed in service.

37. *Failure to designate location of lamps.* That the contractor may not be delayed by the Board of Park Commissioners in the construction of the work, preventing the furnishing of full and complete service by

and or the date above noted, the Board of Park Commissioners shall designate the exact location of all lamps within five days after being requested to do so by the contractor. If the Board of Park Commissioners fails to designate the exact location of any or all lamps within five days after being requested to do so, then the contractor may assume the locations indicated on the plats as being correct, and shall erect same in accordance therewith, and maintain in service all such lamps in accordance with the requirements of this specification.

38. *Incorporated companies.* Bids under this specification will be received from companies incorporated under the laws of Ohio, from foreign corporations duly registered to transact business in the State of Ohio, or parties who shall state their intention to become incorporated under the laws of this state if awarded a contract, and who shall furnish in their bids the incorporated title under which they shall be known, with the list of their proposed incorporators, and the amount of their capital stock, or private parties who may express an intention to carry out the contract if awarded to them under their own names and as such private parties, but no transfer or assignment shall be allowed or permitted to any parties or corporation not specified as the one for whom the bid may be made.

39. *Name of company.* Each bid shall contain the full names of every person or company interested in it, and must be accompanied by an affidavit that no other person or corporation is so interested.

40. *Bid blanks.* All bids must be made on the proposal blank attached to and made a part of this specification and contract.

41. *Right to reject.* The award, if made, shall be to the lowest and best bidder and the Board of Park Commissioners reserves the right to reject any and all bids.

PROPOSAL

FOR LIGHTING BY ELECTRICITY THE PARKS, PARKWAYS, PLAYGROUNDS, ATHLETIC FIELDS AND OTHER PUBLIC LANDS UNDER THE MANAGEMENT AND CONTROL OF THE BOARD OF PARK COMMISSIONERS OF THE CITY OF CINCINNATI, FOR A PERIOD OF TEN YEARS, DATING FROM AND AFTER JUNE 1, 1925

Cincinnati, Ohio,.....1925.

To the Board of Park Commissioners of the City of Cincinnati:

Gentlemen: The undersigned propose to light by electricity the parks, parkways, playgrounds, athletic fields and other public lands under the management and control of the Board of Park Commissioners, in strict accordance with the specification hereto attached and made a part hereof, at the following rates, to wit:

Price per lamp per year for 4 ampere magnetite arc lamps in the underground district:

.....(\$————) Dollars

Price per lamp per year for 4 ampere magnetite arc lamps in the overhead district:

.....(\$.....) Dollars

Price per lamp per year for 80-watt incandescent lamps in the overhead district mounted on equipment not owned by the Board of Park Commissioners:

.....(\$.....) Dollars

Price per lamp per year for 80-watt incandescent lamps in the overhead district mounted on equipment owned by the Board of Park Commissioners:

.....(\$.....) Dollars

Price per lamp per year for 100 candle power mazda lamps in the overhead district, mounted on equipment owned by the Board of Park Commissioners:

.....(\$.....) Dollars

Price per lamp per year for 250 candle power mazda lamps in the overhead district, equipped with monax outer globes and mounted on equipment owned by the Board of Park Commissioners:

.....(\$.....) Dollars

.....

.....

REFERENCES

"General Statistics of Cities, 1916." Bureau of the Census, United States Department of Commerce. Contains statistics on parks, playgrounds, museums, art galleries, music, entertainments, swimming pools, bathing beaches and other features of recreational service, including park lighting.

"Illumination and Traffic Accidents," Earl A. Anderson and O. F. Haas, Engineering Department, National Lamp Works, General Electric Company, Nela Park, Cleveland, Ohio. Paper presented before the Illuminating Engineering Society, 1921.

"Lighting for Recreations," J. H. Kurlander, Engineering Department, Edison Lamp Works, General Electric Company, Harrison, New Jersey. A very valuable presentation of the subject. Excellent bibliography. Illustrated.

"Night Lighting for Outdoor Sports," O. F. Haas and H. M. Sharp, Engineering Department, National Lamp Works, General Electric Company, Nela Park, Cleveland, Ohio (1925). An invaluable study of this subject. Profusely illustrated.

"Park and Boulevard Lighting." Bulletin No. 5, January, 1909, American Association of Park Superintendents. Symposium on park and boulevard lighting by various park executives and engineers.

"Parks in the Larger Cities of the United States," a compilation of statistics on parks in the larger cities of the United States by Caroline L. B. Segrist, Municipal Reference Librarian, Portland, Oregon; republished by Municipal Reference Library, New York City Public Library. Pamphlet contains some information concerning the cost of lighting in parks and rate per K. W. H. (Statistics are of 1924.)

"Report of Street and Highway Lighting Committee." National Electric Light Association, New York City, 1924–25.

"Some Notes on Modern Street Lighting," H. M. Sharp, National Lamp Works of the General Electric Company, Nela Park, Cleveland, Ohio. (1926.)

"Street Lighting," D. L. Gaskill. Paper presented before the Ohio Electric Light Association, 1921.

"Street Lighting Designs," O. F. Haas, National Lamp Works of General Electric Company, Nela Park, Cleveland, Ohio. Bulletin 46-A.

"Street Lighting with Mazda Lamps," R. E. Greiner, Lighting Service Department, Edison Lamp Works of General Electric Company, Harrison, New Jersey. Contains information that may be helpful in lighting boulevards and parkways. Also a comprehensive bibliography.

CHAPTER XVI

PARK SANITATION[1]

In general community sanitation park and recreation areas are in themselves very important factors. They let in sunlight and fresh air. They freshen the air by growing things. Moreover some of the most beautiful and useful park and recreation areas have been created from miasmatic, mosquito breeding areas or areas made unwholesome by cheap, unsanitary housing, garbage dumps, factory wastes or sewer-laden streams.

The universal achievements of park and recreation departments in making it possible for millions of the people to rest or to engage in enjoyable activities in the open air — in shade or sunlight or at night time; and in the redemption of unwholesome, unsanitary areas within cities and their environs warrant their being ranked as sanitary agents of first importance in community life. In fact they are so regarded by all health and sanitary authorities. However, wherever people congregate sanitary problems inevitably arise, and recreation areas, in spite of their own intrinsic worth as sanitary factors in community life, are no exceptions.

Sanitary Problems with Which Park and Recreation Authorities Have to Deal

Among the sanitary problems with which park and recreation authorities have to deal may be enumerated the following: (1) Water supply; (2) Disposal of waste, sewage and refuse; (3) Pest control, mosquitoes, flies, etc.; (4) Dust control; (5) Weed control; (6) Sanitary care of various kinds of recreation facilities such as: (*a*) Sand courts; (*b*) Wading pools; (*c*) Swimming pools; (*d*) Refreshment stands and restaurants; (*e*) Camps, family camps, organized camps, tourist camps, etc.; (*f*) Buildings used for recreation purposes.

Water Supply

Wherever park and recreation areas are so located that access can be had to the community water system the problem of water supply for human consumption and for recreative purposes is of comparatively easy solution. Many park and recreation areas throughout the United States are so located that access to a community water system is not available. Thus park and recreation areas located in rural districts (tourist camps, organized camps, family camps, forest park reservations, rural picnic parks, forests used for

[1] Much of the material in this chapter was prepared by George C. Dunham, M.D., Dr. P.H., D.T.M. & H., Fellow, A.P.H.A., Major, Medical Corps, United States Army, and originally appeared in "Camping Out — A Manual on Organized Camping," published by Macmillan Company, New York.

recreative purposes, etc.); areas in villages, towns and small cities lacking water systems; in parts of cities to which the water mains have not yet been extended, etc., must depend upon some other source of water supply. In such situations the source of water supply may come from springs, wells, flowing streams or from a natural lake or an artificial reservoir formed by impounding water.

Amount of Water Required.

It is exceedingly difficult to estimate the amount of water required for general park purposes. In outlying parks it is presumed that very little or no water would be used for irrigation purposes. For drinking purposes the supply should be adequate enough to provide at least from one quart to three quarts per attendant at the park. For family, tourist and organized camps where water is used for drinking, cooking, laundrying, the supply needed would range from ten to thirty gallons per person per day. If in addition to all the foregoing mentioned purposes flush toilets are used the supply needed would be approximately fifty gallons per day per person.

PLATE NO. 302

PUMP SHELTER IN ONE OF THE RURAL PARKS, ERIE COUNTY PARK SYSTEM, ERIE COUNTY, NEW YORK

Note the wide concrete platform around the well.

The amount of water for swimming pools would depend upon the size of the pool and the frequency with which the water is changed.

Where a river, a large creek or a lake is used as a source of water supply, the available quantity will likely far exceed the demand. If a very small stream is used it may be necessary to impound the water by damming the stream in order to secure a sufficient quantity at some selected point. Under such circumstances it is often desirable to ascertain the volume of the flow of the stream. This is done by choosing a part of the stream which is of suitable length and fairly uniform in depth and breadth. The width and depth are measured in feet. A small piece of wood or cork is allowed to float on the surface of the water for a measured distance and the time noted. This will give the surface velocity, which is calculated in feet per hour. Four-fifths of the surface velocity equals the mean velocity of the flow. The formula then is: $D \times B \times V \times 6.23 =$ number of gallons of water per hour in which $D =$ depth in feet; $B =$ width in feet; $V =$ mean velocity in feet per hour; $6.23 =$ number of gallons in one cubic foot.

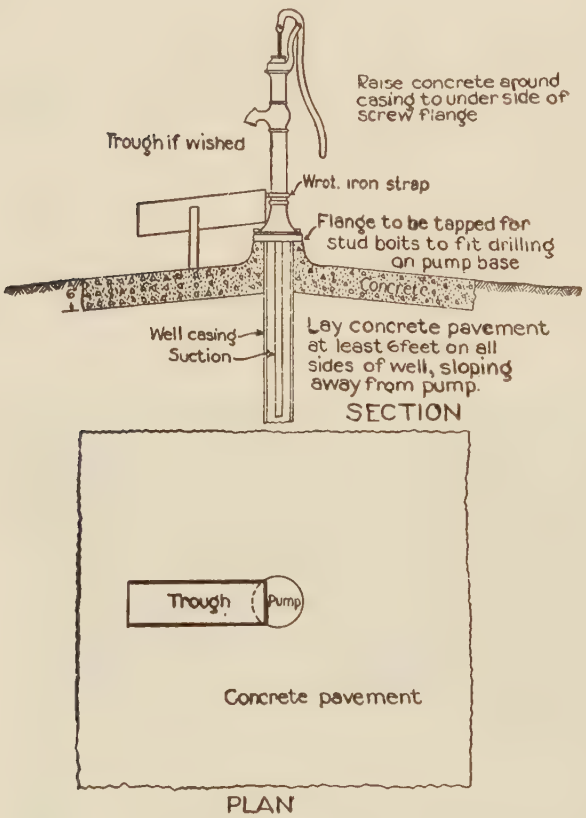
Raise concrete around casing to under side of screw flange
Trough if wished
Wrot. iron strap
Flange to be tapped for stud bolts to fit drilling on pump base
Concrete
Well casing
Suction
Lay concrete pavement at least 6 feet on all sides of well, sloping away from pump.
SECTION
Trough
Pump
Concrete pavement
PLAN

PLATE No. 303

DRIVEN WELL WITH CONCRETE PLATFORM TO SHUT OUT SURFACE WATER

(Pennsylvania Department of Health.)

If a well or spring water is used, it should be determined that the supply is sufficient to meet all demands. The yield of a well may be roughly measured by pumping out all or a part of the water and noting the level to which the water has fallen and allowing the well to refill to the original level or to a selected point. The distance between the level to which the water was reduced by pumping and the point to which it rose after pumping is calculated in feet. The time in hours required for the well to refill is then noted. The capacity of the well is computed as follows:

$$\frac{D \times .785 \times d \times 6.23}{T} = \text{gallons per hour.}$$

D = diameter of the well in feet.

d = distance in feet between the level to which the water was reduced by pumping and the level to which it rose after pumping.

T = time in hours required for the water to rise the number of feet represented by d.

The following figures may be found useful in estimating the capacity of a dug well: In a well 2 feet in diameter, each foot in depth, 20 gallons; 3 feet in diameter, 44 gallons; 4 feet in diameter, 78 gallons; 5 feet in diameter, 122 gallons; 6 feet in diameter, 176 gallons.

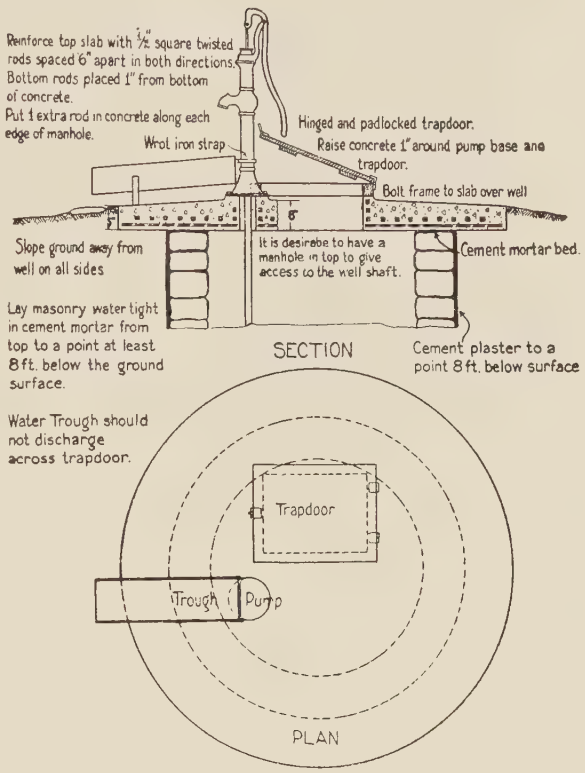
Reinforce top slab with ½" square twisted rods spaced 6" apart in both directions. Bottom rods placed 1" from bottom of concrete. Put 1 extra rod in concrete along each edge of manhole.
Wrot iron strap
Hinged and padlocked trapdoor.
Raise concrete 1" around pump base and trapdoor.
Bolt frame to slab over well
6'
Slope ground away from well on all sides
It is desirebe to have a manhole in top to give access to the well shaft.
Cement mortar bed.
Lay masonry water tight in cement mortar from top to a point at least 8 ft. below the ground surface.
SECTION
Cement plaster to a point 8 ft. below surface
Water Trough should not discharge across trapdoor.
Trapdoor
Trough
Pump
PLAN

PLATE NO. 304
A DUG WELL
Showing method of excluding surface water from the opening and the upper eight feet of the shaft
(Pennsylvania State Department of Health.)

Protection of Water Supply from Contamination.

Unless taken directly from an uninhabited and fully protected watershed all surface water must be considered as potentially contaminated with disease-producing germs. A clear, attractive water is not necessarily a pure water. Surface water is polluted by human excrement, which is washed into it by the rains and melting snows or deposited directly into it by sewers. Streams, lakes or ponds are frequently contaminated by bathers, fishermen or wayside campers. Therefore, any water supply used for any park and recreation purposes not drawn directly from a community water system should be regarded as a probable source of disease until rendered safe for human use by some method of purification or protected against contamination.

Protection of Wells and Springs.

Wells are of two kinds, deep and shallow. A deep well passes into or through an impervious rock stratum, which as a rule effectively excludes surface water. A shallow well is one which does not reach down into the

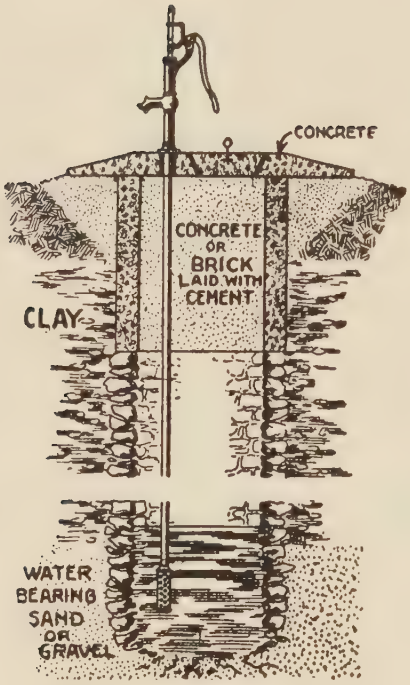

PLATE No. 305. A DUG WELL

Showing method of excluding surface water by use of a concrete platform and by making the upper part of the walls of the shaft water tight with concrete masonry.

(Iowa State College Bulletin No. 56, 1923.)

first impervious layer of rock. The water in a shallow well should be considered to be, and treated as, surface water. It is a contaminated supply. A deep well is usually driven, while a shallow well may be dug or driven. Both deep and shallow wells are frequently polluted by material entering at the top of the well, and this is particularly prone to occur in a dug well, because of the wide shaft. The entrance of contamination into the mouth of a well can be prevented by sealing up the top of the shaft with a cement platform and protecting the immediate vicinity by fences and by intercepting ditches to carry off the surface water (Plate 303). If a dug well is used the upper part of the shaft should have a concrete lining to shut out the surface water coming from the immediate vicinity of the well (Plates 304 and 305). All well water should be pumped either by hand or by power. A bucket should never be used.

Spring water may be derived either from the water flowing above or that lying below the first impermeable stratum. In the former instance, the rate of flow varies markedly with the volume of rainfall and, being surface water, is to be regarded as contaminated. The spring water which rises from below an impermeable stratum has a more constant flow and is usually potable unless it is polluted after reaching the surface. All springs which supply drinking water should be inclosed in a water-tight chamber (Plates 306 and 307) to prevent the en-

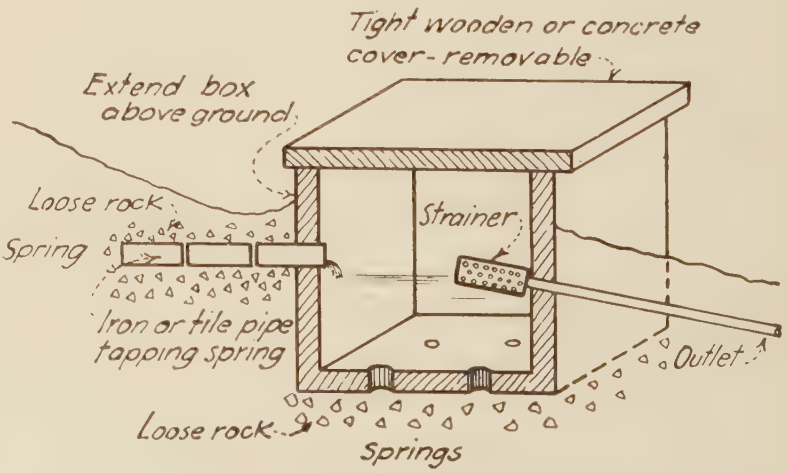

PLATE No. 306. CROSS SECTION OF COLLECTION BOX FOR SPRINGS

(Commission of Immigration and Housing of California.)

trance of polluted surface water. Water can be drawn from the inclosed spring by means of a pump (Plate 308). A trench should be dug around the spring, or at least on the upper side, to carry away the surface run-off of storm water. The area surrounding the spring should be fenced.

Purification of Water Supply.

Water is purified in order to kill the disease-producing germs. This can be accomplished in various ways in parks and other recreation areas dependent upon their own water supplies. Among these various ways the following may be considered:

Boiling water. When water is actually boiled from fifteen to twenty minutes all germs are killed. This method is feasible where only a few people are to be supplied, but is impracticable where any great amount of water is required. Instances where it might be used are in the case of small picnic parties going into a forest reservation or undeveloped large park and desiring to use water from a stream or a spring or well the purity of which is not known; or small camping parties remaining for a few days under similar conditions, etc.; but even in such instances, where boiling water for human use might be considered practicable, it is an unsafe procedure because of the uncertainty of the human element. Where water for drinking purposes must be boiled by the individual in order to render it harmless, the boiling is almost sure to be either carelessly performed or not done at all. If water is turbid or contains organic matter, it should be strained through a closely woven cloth before boiling. Boiled water is flat and has an insipid taste, but is rendered palatable by aeration. Boiled water can be effectively aerated by pouring it through the air from one vessel into another.

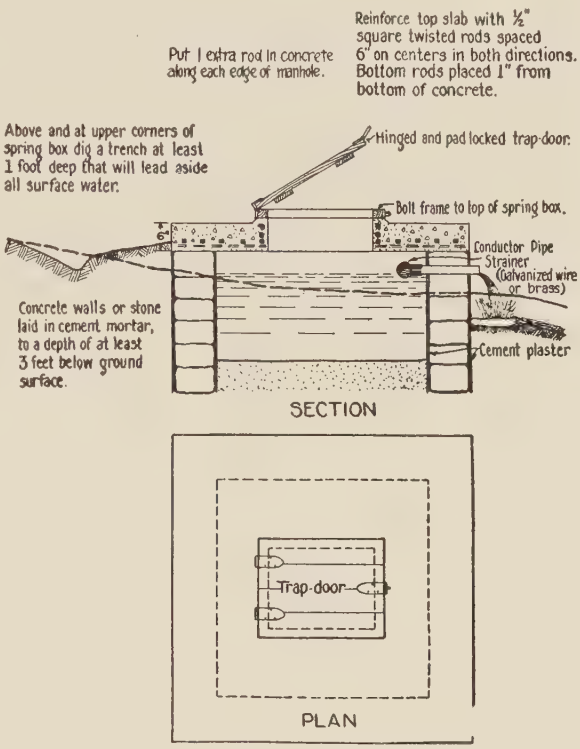
Reinforce top slab with ½" square twisted rods spaced 6" on centers in both directions. Bottom rods placed 1" from bottom of concrete.
Put 1 extra rod in concrete along each edge of manhole.
Above and at upper corners of spring box dig a trench at least 1 foot deep that will lead aside all surface water.
Hinged and pad locked trap-door.
Bolt frame to top of spring box.
Conductor Pipe
Strainer (Galvanized wire or brass)
Concrete walls or stone laid in cement mortar, to a depth of at least 3 feet below ground surface.
Cement plaster
SECTION
Trap-door
PLAN

PLATE No. 307. PROTECTED SPRING FROM WHICH WATER IS OBTAINED THROUGH AN OVERFLOW PIPE

(Pennsylvania State Department of Health.)

Chlorination of water. Chlorine is a gas at ordinary temperature and atmospheric pressure. Chlorine will combine with the organic matter in the water and as germs are organic in nature they are also attacked and killed. In the purification of water chlorine is used either in the pure form (known as liquid chlorine) or as calcium hypochlorite (chlorinated lime, bleaching powder, bleach and chloride of lime).

In the application of chlorine or calcium hypochlorite to the water the amount to be added is calculated as so many parts of free chlorine to one million parts of water. Eight and one-third pounds of liquid chlorine when added to one million gallons of water will give one part chlorine to one million parts of water. Calcium hypochlorite normally contains approximately thirty-three and one-third per cent of free chlorine, and twenty-five pounds of this compound in one million gallons, or four-tenths of an ounce in one thousand gallons of water, will give one part of free chlorine per million parts of water. These figures constitute the basis for computing the amount of chlorine or calcium hypochlorite to be added to the water supply.

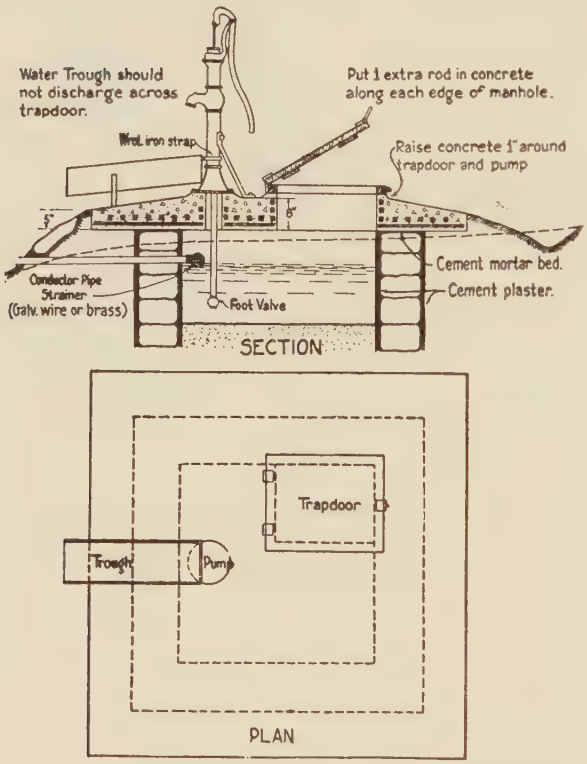

PLATE No. 308. INCLOSED SPRING WITH CONCRETE PLATFORM AND TRENCH TO PREVENT SURFACE WATER FROM ENTERING THE SPRING
(Pennsylvania State Department of Health.)

Wherever possible, all water to be used in parks and recreation areas that comes from a source other than a community water system should be purified before being delivered to the user. In the case of picnic parties, small camps, hiking parties, where the supply of water to be used comes from streams, lakes, springs or wells of unknown purity, the drinking water can be chlorinated either by the individual hiker, picnicker or camper or by the leader of any group or by the person in charge of the park or forest area.

One of the safest and most practical means of chlorinating water for small groups is through the use of the so-called Lyster Bag method. The

Lyster Bag is a water bag made of waterproof canvas, having a capacity of thirty-six gallons (Plate 309). This bag is suspended by ropes from a support and is equipped with one or more faucets at the bottom. Calcium hypochlorite for use in a Lyster Bag can be purchased in one gram (15 grains) glass ampules from firms dealing in camping supplies or from chemical companies. The bag is filled with water to the thirty-six gallon mark. If the water is turbid (muddy), it should be strained into the bag through a closely woven cloth stretched across the top. One gram of the calcium hypochlorite is dissolved in a cup of water and the solution added to the thirty-six gallons of water in the bag. The water is then stirred a few times with a clean stick and allowed to stand thirty minutes before using, in order to give the chlorine time to act. Water chlorinated in a Lyster Bag will frequently have a taste which is disliked by some people. This taste is due to compounds formed by the union of the chlorine with organic matter, but the amount of chlorine in the water is so small that it is absolutely harmless and cannot possibly injure the health of the consumer.

If the Lyster Bag is not available, water may be chlorinated in galvanized iron containers, or other convenient receptacles, by the addition of one gram (1 ampule) of calcium hypochlorite to each thirty-six gallons of water. If only small containers are at hand, water may be purified for drinking purposes by first breaking a one-gram ampule of hypochlorite into one quart of clear water and after thoroughly mixing adding two teaspoonfuls of this strong solution to one quart of drinking water, which must be allowed to stand for thirty minutes before using.

Plate No. 309
LYSTER BAG

The Lyster Bag method of treating water or one of its modifications is superior to boiling water where the disinfection must be carried out by the individual hiker, picnicker or camper, because the chance of neglect or error is less in the former than the latter process. The Lyster Bag method has the disadvantage that the water disinfected by this method is not ordinarily used for cooking. Theoretically, cooking should in itself serve to sterilize the water, but quite frequently the water is not heated sufficiently to kill all the germs.

The chlorinating of water used for bathing and swimming is discussed in that section relating to the sanitation of swimming pools (pages 891–898).

Purification of the Entire Park Water Supply

In large outlying reservations where a community water system is not available it may be found desirable to develop a centralized water system, similar to a community water system, which will supply all the water used in the park by campers, picnickers, hikers or other users of the area. This involves the collection of water into a central reservoir or several reservoirs and the purification of the water by the addition of chlorine while in the reservoirs before being delivered to the user.

Where water is obtained from a stream or possibly from an artesian well, it may be carried to the reservoir by gravity. Where the reservoir or tanks are higher than the primary source of the water, a booster pump must

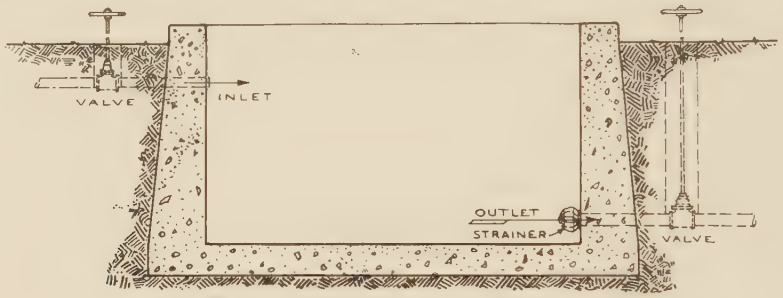

Plate No. 310
RESERVOIR SHOWING POSITION OF INLET AND OUTLET
The reservoir should be screened or roofed to prevent the entrance of insects and small animals.

be used to elevate the water from the intake into the reservoir. The intake usually consists of pipe with lateral openings which are screened to prevent the entrance of debris. In a large stream the intake pipe should extend some distance from the shore, and in any event should be well below the low-water mark.

Two reservoirs should be provided, each of sufficient size to furnish water for the maximum population of the area for a period of at least twelve hours. From the reservoirs the water is distributed to various parts of the park (picnic places, camp grounds, refreshment stands, restaurants, toilet stations, etc.) through underground iron pipes, and it is therefore essential that the reservoirs be so located that the water can be distributed by gravity. The reservoirs should be at least twenty feet above the faucets of the distributing system so as to provide sufficient pressure. Where high ground, such as a hill, is available, the reservoirs may consist of concrete basins placed upon or preferably in the ground. If this method is not possible or feasible, then wooden or iron tanks are elevated to a suitable height by framework or piers. The reservoirs or tanks should be covered or screened to prevent the access of birds or rodents.

It is difficult to fix any principle as to the capacity of such reservoirs because this would depend upon the volume of use and the character of that use. For permanent organized camps the reservoirs should have such a capacity as to supply from fifty to seventy-five gallons per capita per day.

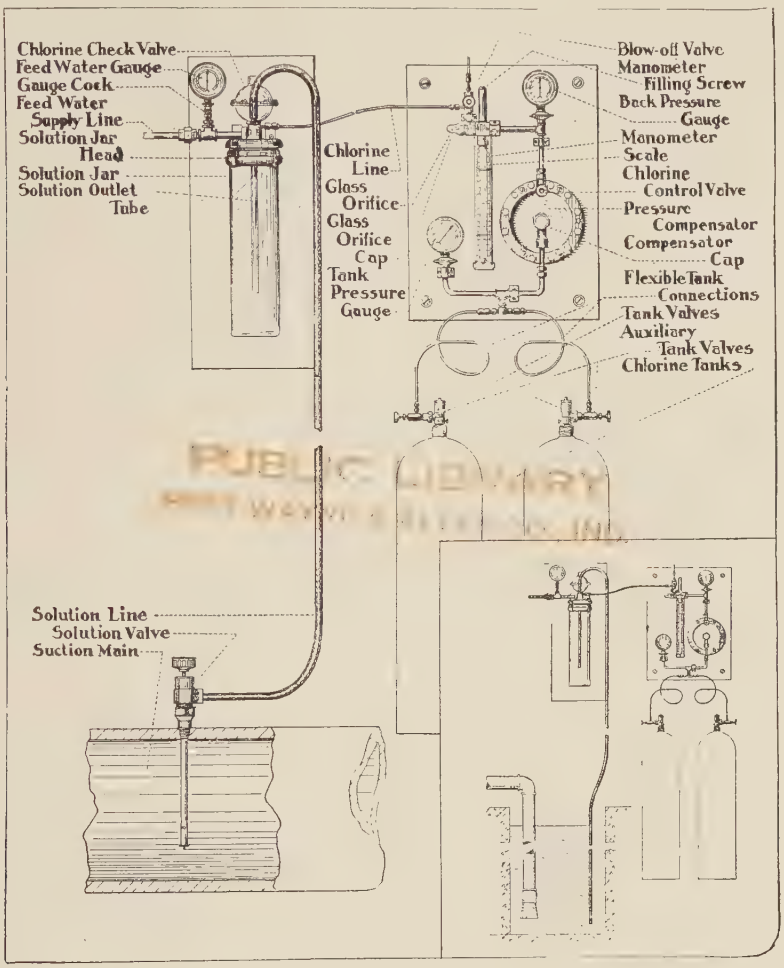

PLATE NO. 311

ONE TYPE OF APPARATUS FOR THE APPLICATION OF LIQUID CHLORINE

Tourists' camps would probably use almost the same; picnickers considerably less. Allowance should also be made for fire protection.

Each reservoir is equipped with an inlet pipe and valve near the top and an outlet pipe and valve near the bottom on the side or opposite the inlet. The latter should be so placed that the material deposited on the bottom will not be drawn out into the pipes. To purify the water the reservoir is filled by closing the outlet valve and allowing the water to run in through the inlet pipe until the desired depth is reached, when the inlet

valve is closed. Calcium hypochlorite is added at the rate of five-tenths to one part per million of free chlorine, or from one to two ounces of the calcium hypochlorite per five thousand gallons ofwater. The amount to be used depends upon the turbidity of the water and can be determined by testing for free chlorine in the treated water. If the water is clear, a solution of calcium hypochlorite (2 ounces dissolved in 3 or 4 gallons of water) is added to the water while it is flowing into the reservoir. If turbid, the water should be allowed to stand for some time, six hours or more, before the calcium hypochlorite solution is added, so that some of the solids will settle out. In any event, the chlorine should remain in contact with the water for at least thirty minutes before it is delivered to the consumer.

Liquid chlorine may be used where there is regularity of flow and large quantities of water are used. The chlorine gas is liquefied by pressure in steel cylinders, and assumes the gaseous form when released. A solution of the gas is made and applied to the water by means of an apparatus known as a chlorinator (Plate 311). This system should be installed under the direct supervision of an engineer.

All chlorinated water should be tested daily to determine the amount of free chlorine in the supply as delivered to the consumer, regardless of whether the Lyster Bag method is used or the water purified in reservoirs. Two methods of practical value are available — the starch-iodine and the orthotolidin tests. Either of these can be made by an intelligent employee, and it should be the specific duty of some one individual to make tests daily. The water as delivered should contain between 0.1 to 0.5 part per million of free chlorine.

The starch-iodine test. Thirty minutes or more after the chlorine has been added to the water a cupful is tested for free chlorine by adding from a medicine dropper ten drops of a solution containing 10 per cent of potassium iodide, 1 per cent of soluble starch, and 0.5 per cent of zinc sulphate. If a blue color appears free chlorine is present and the water is potable. If no blue color is seen the water is still polluted and requires further chlorination.

The orthotolidin test. As in the starch-iodine test, the water is tested thirty minutes or more after chlorination. A four-ounce bottle is filled to the shoulder with the water to be tested and to this water is then added fifteen drops of an orthotolidin solution consisting of 0.1 gram of orthotolidin crystals dissolved in 100 c.c. of a 10 per cent hydrochloric acid solution. If a yellow color develops free chlorine is present and the water is potable. If no yellow color is seen more calcium hypochlorite is needed. The amount of chlorine used should be just enough to produce the blue color with the starch-iodine test, or a yellow color with the orthotolidin test.

At weekly or bi-weekly intervals samples of the water should be sent to the nearest branch of the state health department for bacteriological analysis with the request that the tests be interpreted in terms of safety for drinking purposes. Local municipal or county health authorities may also make such analyses. Containers and directions for collecting and mailing the samples can be obtained from any state board of health or from local health authorities. The disagreeable taste which is sometimes present in chlorinated water may give rise to some complaints. This taste can partially be removed or wholly eradicated by the use of a solution of sodium thiosulfate in quantities equal to one-half the amount of calcium hypochlorite applied. The sodium thiosulfate stops the action of the chlorine and must not be added until at least thirty minutes after the introduction of the chlorine.

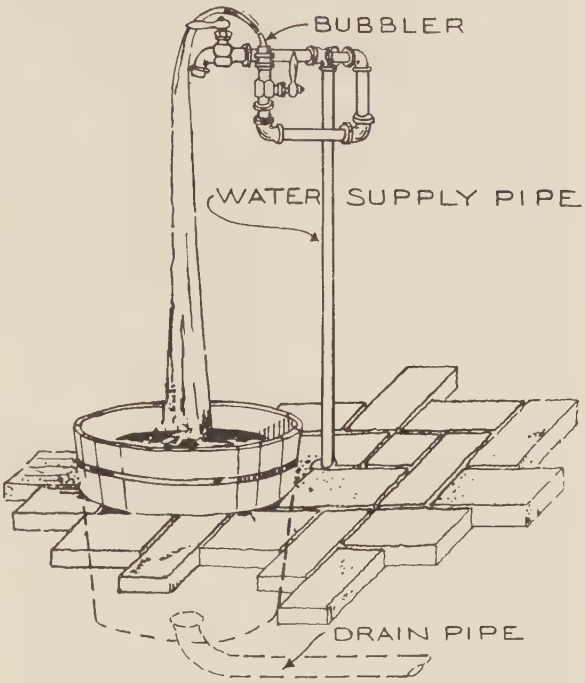

PLATE NO. 312
DRINKING FOUNTAIN WITH CATCH BASIN
Bubbler should have protector to prevent insertion of tube in mouth.

Park officials must not forget that the effective purification of the water supply is dependent upon the skilful and continuous supervision of whatever system is used, and that there can be no justification for neglecting this very important factor in the successful management of the park areas and the facilities therein.

DISTRIBUTION OF THE WATER SUPPLY

It is essential that the water after it is purified be so distributed that the individual using the park either at a picnic ground or in a camp or at any other facility provided will find it more convenient to use the pure water than to satisfy his wants from a contaminated supply. Drinking fountains, if a centralized water system is used, should be located at all places where people are accustomed to congregate. These should be of the automatic shut-off type to avoid wastage of water. Wherever an outside faucet or drinking fountain is installed steps should be taken to prevent

the water from reaching the ground in its immediate vicinity or the area will soon become muddy and water soaked. The drippings, overflow and discarded water may be caught in a receptacle, as shown in Plate 312, on page 837, which is in turn connected with an underground drain.

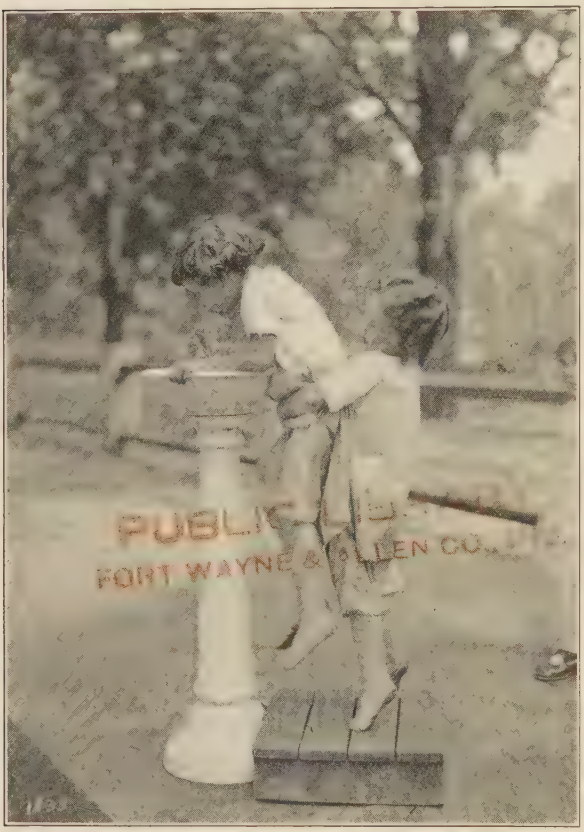

PLATE NO. 313
ILLUSTRATING A TYPE OF DRINKING FOUNTAIN THAT IS THOROUGHLY SANITARY

Better provision, however, should have been made for its use by little children.

The common drinking cup should never be tolerated. Where drinking fountains are not used individual drinking cups should be provided. Ice should never be placed in direct contact with water to be used for drinking purposes. Cold does not kill the disease-producing germs, and the water from which the ice is made or harvested is frequently contaminated, or the ice itself may be infected by the dirty hands of those who handle it. Drinking water can be cooled by passing it through coils of pipe surrounded by ice contained within a suitable box or other receptacle. The ice box and coils are frequently placed underground and the pipe connected with a drinking fountain or faucet.

DISPOSAL OF WASTES

Waste material is divided into two classes: sewage and refuse. If waste matter is allowed to accumulate, it not only soon creates a nuisance, but also constitutes a potential, and in many instances an actual, danger to the health of the people using the park and other recreation areas. Every park and recreation system must have some means of disposing of wastes which will effect their satisfactory removal from direct or indirect contact with man.

Sewage Disposal.

Ordinary park sewage consists of human excreta (feces and urine), bath water about camps and swimming centers and liquid kitchen wastes about camps, refreshment stands and restaurants. Where water under pressure is available a water carriage system, consisting of sewers through which the sewage is carried by water, can be installed and all the sewage carried away through the sewers and disposed of in a suitable manner.

Disposal of Feces and Urine.

The only proper method of disposal of sewage of this type, wherever park and recreation areas are so located as to make use of a community water system and a community sewer system, is the installation of modern sanitary flush toilets. The installation of this equipment should be placed well toward the front of the development of any given area that is designed to be used actively and intensively. Notwithstanding the importance of such equipment from the standpoint of both comfort and sanitation there are many children's playgrounds, playfield areas and large parks in this country entirely without toilet facilities of any kind and many other park areas, the location of which would make possible the installation of the most modern sanitary equipment, are equipped with ordinary privies and these often of not the best and most approved type. Indeed there are a few comparatively large and fairly highly developed park and recreation systems that were found to be, in 1925, without any modern sanitary toilet equipment. This is an omission in development and equipment for which there is no possible excuse, especially where park and recreation areas used largely by

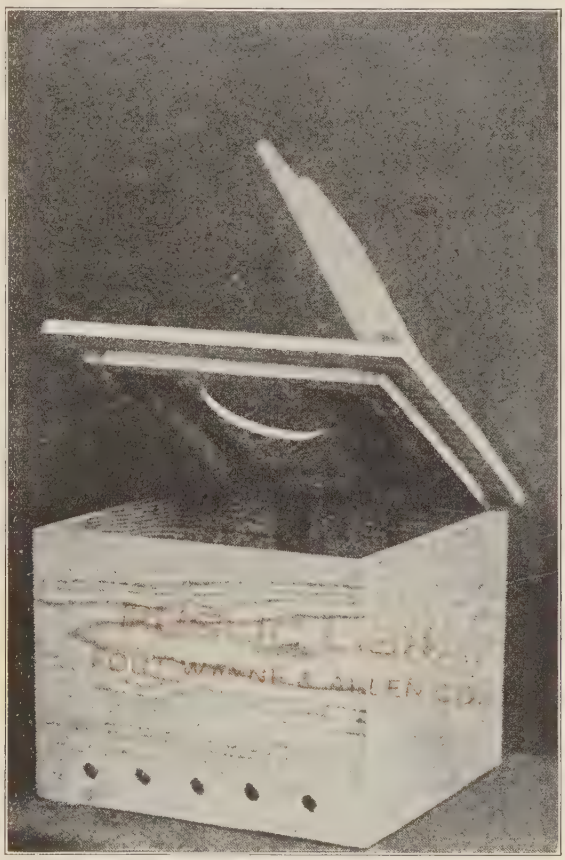

PLATE NO. 314
PRIVY BOX FOR A ONE-SEATED SANITARY PRIVY
(Public Health Bulletin No. 89, Lumsden.)

the people are so located as to make the community water and sewer systems accessible. It should be the duty of the local and state health authorities to exert their great powers to encourage, and if necessary compel park and recreation authorities to provide the most adequate and modern toilet facilities possible in all areas under their jurisdiction as they are developed and thrown open to the use of the people.

Because of the carelessness of people in general the design of modern sanitary equipment for the disposal of human excreta should be such as to reduce to the lowest possible minimum the ill effects of carelessness or abuse of equipment. For example, the various types of urinals elevated above the floor frequently found in park and recreation toilet buildings and in toilet rooms of other structures are never as sanitary as the type of urinal sunk into the floor with the floor sloping toward it. This latter type of urinal is easy to install, is adaptable to all ages and can more easily and readily be cleaned by flushing and scrubbing than the elevated types. Toilets with spring seats and automatic flush equipment are desirable in park toilets because of the carelessness of many people in failing to flush toilets of the ordinary type after using them.

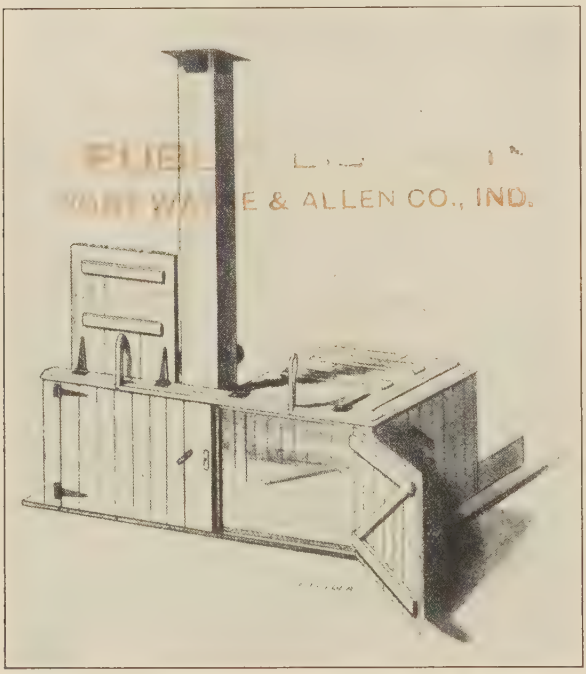

PLATE NO. 315
TWO-SEAT PRIVY BOX FOR SANITARY PRIVY SHOWING VENT FLUE
(Public Health Bulletin No. 89, Lumsden.)

The floors of toilet rooms should be of concrete or other equally impervious and easily cleaned material so as to permit flushing with a hose. The floor should be carried up as a part of the wall for at least a distance of six inches with rounded corners, leaving no place where dirt can accumulate. All floors should be trapped so that water used in flushing and scrubbing the floors can readily run off. The use of so-called disinfecting chemicals is not generally recommended for the reason that they often cover up undesirable, unpleasant odors with another odor not so distasteful without affecting the essential unsanitary condition of the toilet room. The only real proper sanitary control is, in the first place, to have the rooms properly

constructed and the best equipment available installed, and secondly, eternal and consistent vigilance by the caretakers in daily cleaning, or more often if necessary. Most of the unpleasant, unsanitary conditions in public park toilets of the modern sanitary type is due to the failure of caretakers to perform their duties regularly and painstakingly.

In parks and other recreation areas located in rural districts, villages, towns and small cities, metropolitan districts of cities, or other places having no community water or sewer systems, types of toilets other than modern sanitary flush toilets must be used unless in a given park area there is developed a water and sewer system similar to a community system. Under such conditions there are several ways of disposing of human excreta of which the following are some of the different types.

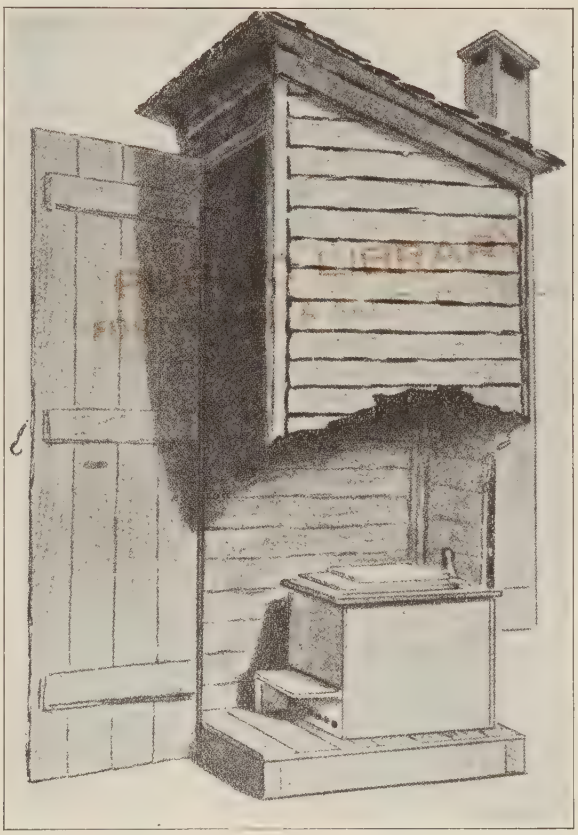

Plate No. 316
A ONE-SEATED SANITARY PRIVY
(Public Health Bulletin No. 89, Lumsden.)

The sanitary privy. The sanitary privy provides a method of temporarily storing human excreta in such a manner that it does not become a menace to the health of man. Essentially such a privy consists of a removable receptacle, or privy pail, for receiving the excreta, a privy box and a fly-proof, ventilated building. The privy box containing the receptacle is constructed as shown in Plates 314 and 315. The box is about twenty inches from front to back and seventeen inches high. The length depends on the number of seats, a one-seat privy being about twenty-two inches long. Each seat is equipped with a well-fitting, self-closing lid (Plate 315).

Usually an opening is made at the back of the box just large enough to permit the ready removal of the receptacle and equipped with a well-fitted and substantial door. Experience has shown, however, that when the doors are at the back of the box the hinges are frequently broken or

bent so that flies can gain access to contents of the pail. The best type of privy box is that depicted in Plate 314, which permits the removal of the receptacle through the top of the box.

It is essential that the privy box be fly-proof and that the interior be well ventilated. Ventilation is accomplished, as shown in Plate 316, by boring a number of two-inch vent holes on one side of the box and placing a vent flue on the other side. Where two or more seats are built in one privy the vent holes can be placed in the front of the box. All vent holes and the openings of the vent flue are screened with sixteen-inch metal screening. The best receptacle for receiving the excreta is a galvanized iron pail or can made of heavy material which will stand fairly hard usage without developing leaks (Plate 317).

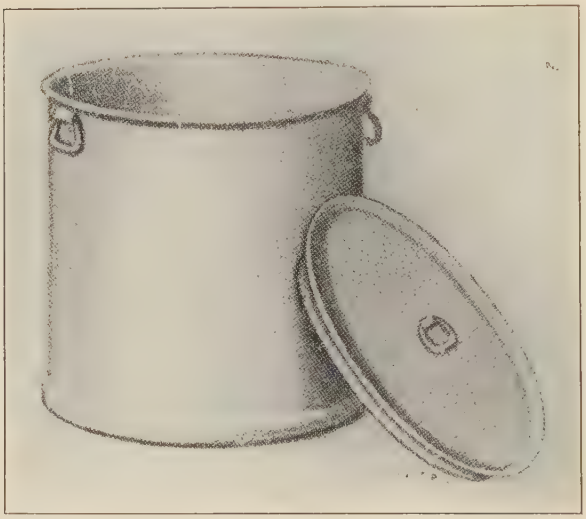

PLATE NO. 317
RECEPTACLE FOR USE IN A SANITARY PRIVY

The cover should be placed on the can immediately after removal from the privy.
(Public Health Bulletin No. 89, Lumsden.)

It is very difficult to estimate the number of privy seats that should be provided for ordinary park and recreation area usage. For camps the standards range from the very low minimum of one seat to every five persons to one seat for every twenty persons. A desirable standard would be one seat to every ten or fifteen persons. Tourists' camps should have practically the same toilet provisions. At picnic places the only way to discover how many seats are desirable would be to study for a period of time the numbers of people making use of the various picnic centers and make provision accordingly. In the construction of toilets it is desirable that each seat be separated from the adjoining seats by a partition. Plates 318 and 319 show one method of constructing a six-seat privy. The building itself should be made fly-proof by screening doors and windows.

The disposal of the contents of the sanitary privy may be accomplished in one of several different ways. The pails should be removed and emptied at weekly or semi-weekly intervals, or oftener if necessary. When taken from the privy, the pail should be covered and immediately removed with its contents to the place of ultimate disposal, a clean pail having in the

meantime been placed in the privy. If the park is situated near a sewered community, arrangements can usually be made to empty the contents of the pails directly into a sewer manhole to be disposed of with the sewage

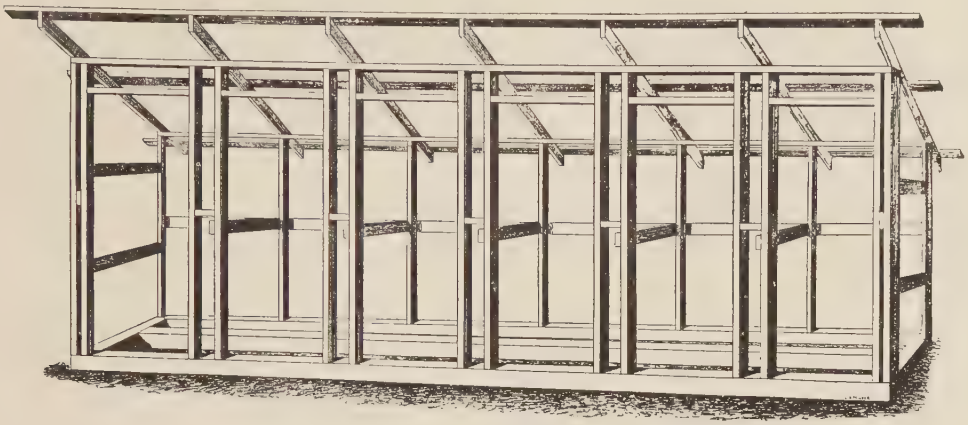

PLATE No. 318
FRAMEWORK OF SIX-SEATED SANITARY PRIVY
(Public Health Bulletin No. 37, Stiles.)

in sewer. Where this can be done, it offers the safest and most practicable method of disposing of the excreta from a sanitary privy.

The excreta may be buried at a point sufficiently far removed from human habitation and where there is no danger of contaminating water supplies. Either a pit or shallow furrows may be used for this purpose, but in any event, the excreta should be immediately covered with a few

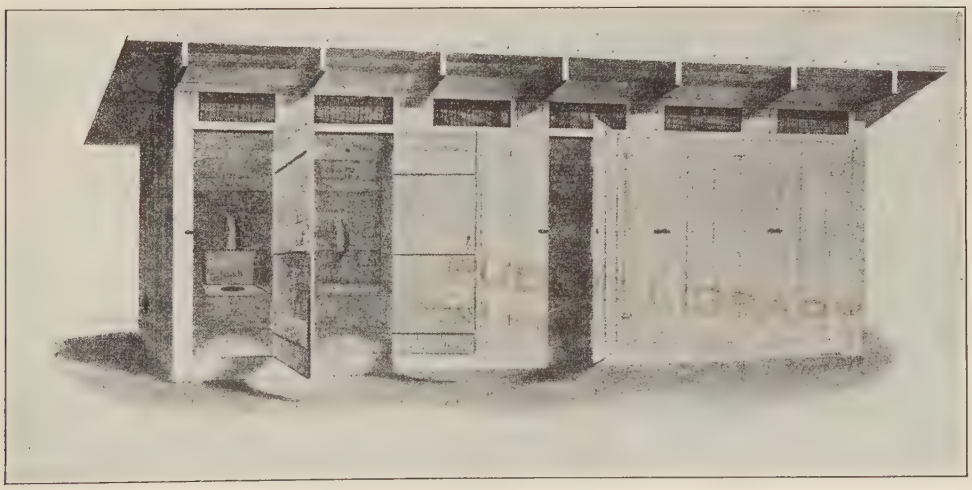

PLATE No. 319
FRONT VIEW OF A SIX-SEATED SANITARY PRIVY
(Public Health Bulletin No. 37, Stiles.)

inches to a foot of tamped earth to prevent fly breeding. If the land is available, shallow furrows are the best, as the excreta decomposes more rapidly when placed in a thin layer in contact with the top soil than it does when buried in a deep pit. The furrows should be from eight to twelve inches in depth. The ground so used may be cultivated after the lapse of a year.

The excreta may be burned in an incinerator constructed for that

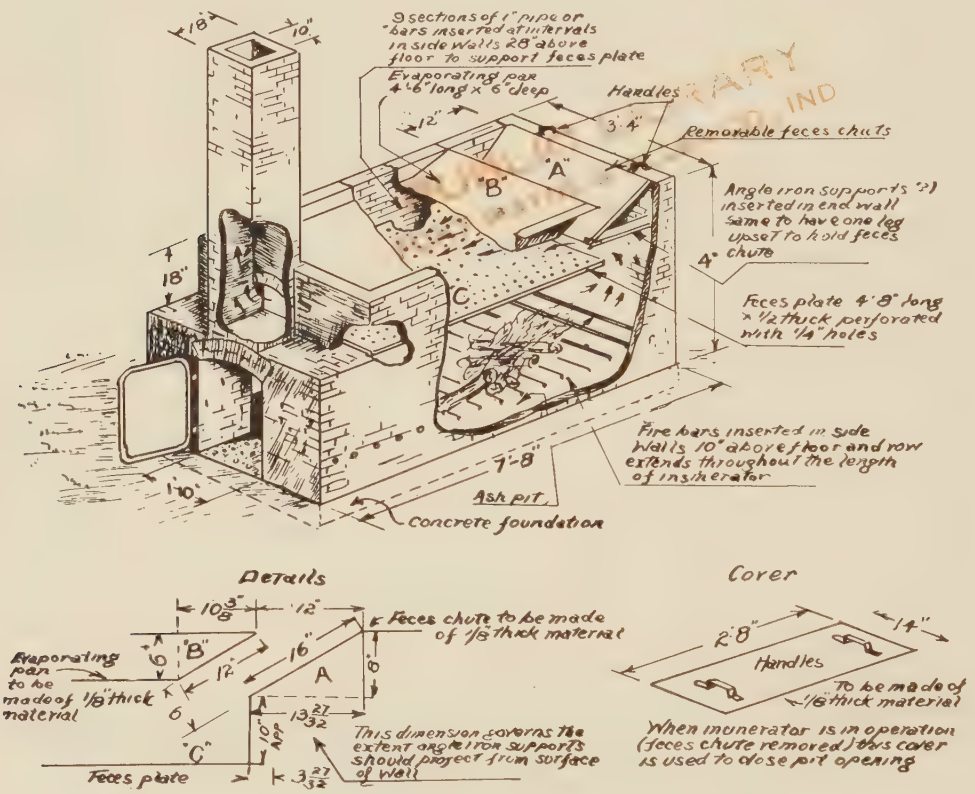
9 sections of 1" pipe or bars inserted at intervals in side walls 28 above floor to support feces plate
Evaporating pan 4'-6" long x 6" deep
Handles
Removable feces chute
Angle iron supports (2) inserted in end wall same to have one leg upset to hold feces chute
Feces plate 4'-8" long x 1/2 thick perforated with 1/4" holes
Fire bars inserted in side walls 10" above floor and row extends throughout the length of incinerator
Ash pit
Concrete foundation
Details
Feces chute to be made of 1/8 thick material
Evaporating pan to be made of 1/8 thick material
This dimension governs the extent angle iron supports should project from surface of wall
Feces plate
Cover
Handles
To be made of 1/8 thick material
When incinerator is in operation (feces chute removed) this cover is used to close pit opening

PLATE NO. 320

DETAILS OF THE FORT RILEY-McMUNN INCINERATOR

purpose, but incineration is the least desirable means of disposing of excreta. A feces incinerator is difficult and expensive to operate, and a disagreeable odor is frequently produced. If it is found desirable to install a feces incinerator two general types are available which, if properly operated under favorable conditions, will destroy the excreta. For a small camp of from twenty-five to one hundred persons the Fort Riley-McMunn incinerator is probably the most efficient. The details of construction are shown in Plate 320. In the operation of this incinerator the feces and urine are separated in so far as is practicable. The feces are poured down the feces chute (*A*) on to the perforated feces plate (*C*). The feces plate is made of one-half-

inch boiler plate and the feces chute of one-eighth-inch sheet iron. The urine is placed in the evaporating pan (*B*). The flame from the fire box passes under and around the end of the feces plate and between the feces plate

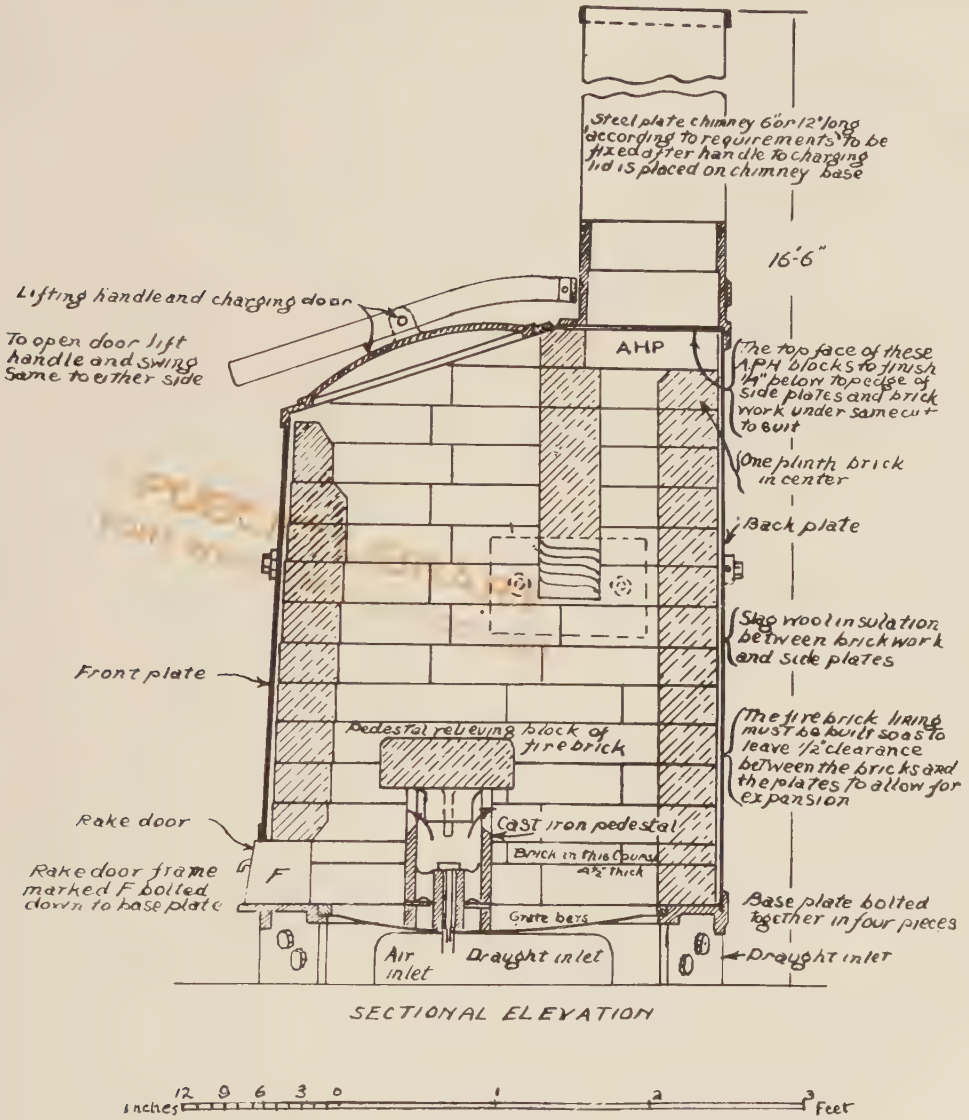
Steel plate chimney 6 or 12' long according to requirements to be fixed after handle to charging lid is placed on chimney base
16'-6"
Lifting handle and charging door
To open door lift handle and swing same to either side
AHP
The top face of these AHP blocks to finish 1/2" below top edge of side plates and brick work under same cut to suit
One plinth brick in center
Back plate
Slag wool insulation between brickwork and side plates
Front plate
Pedestal relieving block of fire brick
The fire brick lining must be built so as to leave 1/2" clearance between the bricks and the plates to allow for expansion
Rake door
Cast iron pedestal
Brick in this course 4 1/2" thick
Rake door frame marked F bolted down to base plate
F
Grate bars
Base plate bolted together in four pieces
Air inlet
Draught inlet
Draught inlet
SECTIONAL ELEVATION
Inches 12 9 6 3 0 1 2 3 Feet

PLATE NO. 321
THE "HORSFALL" DESTRUCTOR

and the urine evaporating pan, burning the feces and evaporating the urine. The evaporating of the urine requires a great deal of heat and, if practicable, a large proportion of the urine should be disposed of in soakage pit rather than by evaporation.

The Horsfall destructor (or incinerator) as shown in Plate 321 is suit-

able for use in handling much larger quantities of excreta than the type previously described. This incinerator should be constructed under expert supervision. Where incinerators of any kind are installed for constant use over a considerable period of time a battery of two or more should be built in order that one may be placed out of service for repairs.

The septic tank installation can be used for the disposal of the excreta from a sanitary privy, provided that a corresponding amount of water, fifteen to twenty gallons per person per day, is introduced into the tank with the excreta. The excreta must be placed in the tank at such intervals as will not cause overloading. This plan is particularly feasible where some of the camp sites or picnic places are equipped with flush toilet and septic tank disposal systems and the remainder with sanitary privies.

Whatever method is used to dispose of the contents of the sanitary privy, the privy pails must be handled with care and precautions taken to prevent the spilling of the contents in the privy boxes or on the ground. Hand-propelled carts or a small motor truck may be used to transport the pails to the place of ultimate disposal. The pails should be removed at night, or at such other times as will produce the least offense. When emptied, the can is thoroughly cleansed with water, either from a hose under pressure or by swabbing and rinsing. The bottom of the cleaned pail should be covered with about one-half to one inch of a five per cent solution of cresol which will serve as a deodorant as well as a disinfectant.

The L. R. S. privy. The septic tank principle of sewage treatment is utilized in the operation of a L. R. S. privy. For parks and reservations where flush toilets cannot be used the L. R. S. privy, or one of its modifications, provides the best means of disposing of human excreta. The essential feature of a L. R. S. privy is a small septic tank having two compartments, the liquefying tank and the effluent tank (Plate 322). The liquefying tank is directly under the privy box. The excreta is retained for a time in the liquefying tank where it undergoes decomposition and liquefaction with some reduction in volume. From the liquefying tank the liquid passes through a screened pipe into the second compartment known as the effluent tank. From the latter

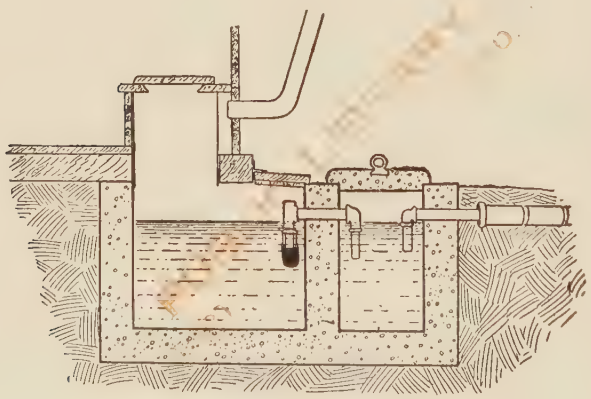

Plate No. 322
L.R.S. PRIVY WITH CONCRETE TANKS
(Public Health Bulletin No. 68, Lumsden, Stiles & Freeman.)

tank the effluent is gradually discharged through an overflow pipe into a subsurface irrigation system, onto a filter, or into a stream.

The liquefying tank should have a capacity of at least forty gallons (6 to 7 cubic feet) of water when the water just reaches the level where it begins to trickle into the effluent pipe. Such a privy is large enough for three persons and the capacity of the tank must be increased by ten to twelve gallons for each additional person. The effluent tank may be somewhat smaller, but should be of sufficient size to receive and store a fair amount of the fluid from the liquefying tank. The modification of the L. R. S. privy, known as the Kentucky Sanitary Privy, is shown in Plate 323. This type has one tank divided into three compartments by baffles. While concrete liquefying and effluent tanks are desirable, a very satisfactory L. R. S. privy can be built with the tanks made of iron barrels or drums as shown in Plates 324 and 325. In this type of privy the effluent tank when full can be hauled away and emptied. If necessary, the effluent can be disinfected prior to disposal by the addition of one to two ounces of calcium hypochlorite in solution to each fifty gallons of effluent.

As the septic action causes a reduction in the volume of the excreta additional water must be placed in the liquefying tank at weekly intervals. The amount added will vary according to the rate of evaporation, but usually about five per cent of the capacity of the tank will be sufficient. Thus, about two and one-half gallons should be added to a fifty-gallon tank once each week. The liquid in both tanks should be kept covered with a film of crude oil or kerosene. The privy box for a L. R. S. privy is the same as that described for a sanitary privy except that the excreta is received into the liquefying tank instead of a removable pail. The box should be provided with screened vent holes and vent flue, and automatically

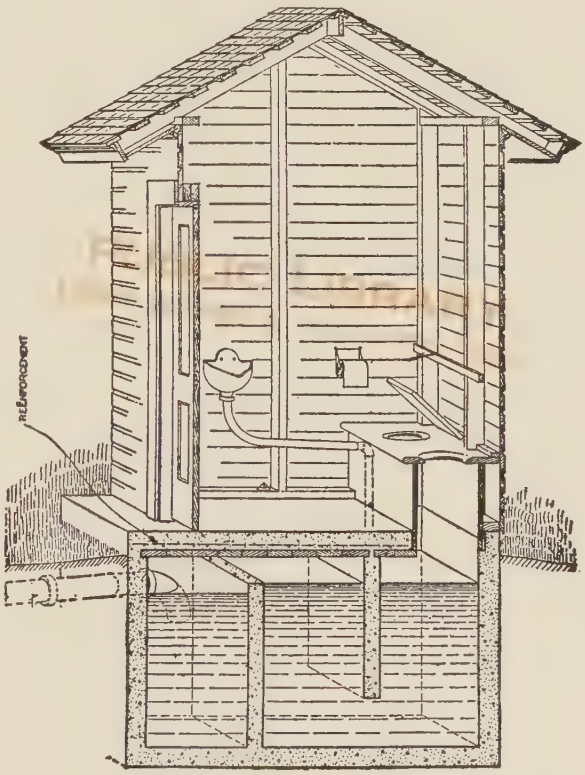

PLATE NO. 323. L. R. S. SANITARY PRIVY

(The Kentucky sanitary privy, Kentucky State Board of Health, 1913.) One type of urinal is shown. The front compartment is the effluent tank and liquefaction takes place in the middle and rear compartments.

closing lids. The seats should be separated by partitions. An anti-splash board may be installed, as shown in Plates 324 and 325. The anti-splash

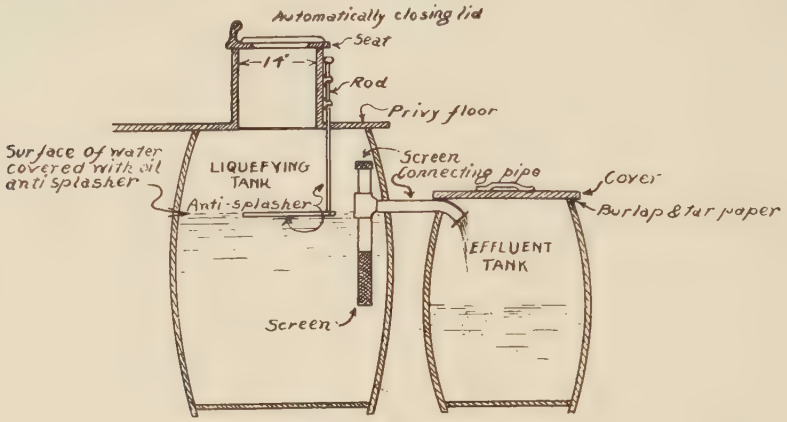

PLATE NO. 324

L. R. S. PRIVY IN WHICH THE LIQUID TANK AND THE EFFLUENT TANK CONSIST OF STEEL DRUMS

board is raised when the privy is used and lowered into the liquid immediately after.

The building for a L. R. S. privy differs in no essential respect from that described for the sanitary privy. It should be fly-proof and well ventilated.

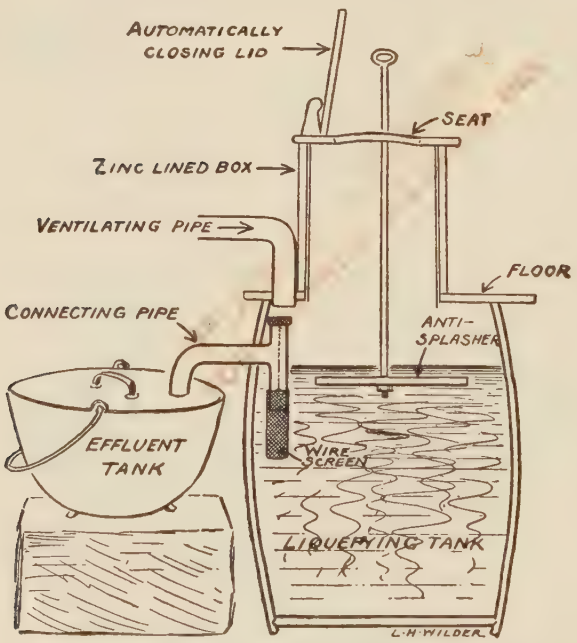

PLATE NO. 325. L. R. S. PRIVY IN WHICH A BARREL OR IRON DRUM IS USED FOR A LIQUEFYING TANK, AND AN IRON POT FOR AN EFFLUENT TANK

The latter is carried away and emptied when full. (Public Health Bulletin No. 68, Lumsden, Stiles and Freeman.)

The effluent from a L. R. S. privy is potentially dangerous and must be disposed of where it will not endanger the health of man. If disposal by subsurface irrigation is not practicable, the effluent tank can be emptied at intervals and the contents buried or poured into a sewer. The effluent from a number of L. R. S. privies such as those shown in Plates 322 and 323 can be conducted through watertight pipes to a central siphon chamber and hence to a subsurface irrigation field or a small intermittent filter in the same manner as the effluent from a septic tank. With this kind of an in-

stallation a number of L. R. S. privies will function as efficiently, as far as the sanitary disposal of the excreta is concerned, as a flush toilet and water carriage system of disposal.

The barrel-sawdust privy (Plate 326). To construct a barrel-sawdust privy the head is removed from a water-tight hogshead such as a molasses hogshead. The head and the bottom are then removed from a water-tight barrel of such size as to easily fit within the hogshead. Four cleats are nailed on the outside of the barrel seventeen inches from the top and the barrel set inside the hogshead so that it is supported by the cleats resting upon the upper edge of the hogshead. The latter is then filled with sawdust to a little above the lower end of the barrel. The sawdust is also packed around the barrel between it and the hogshead to the level of the cleats. The barrel constitutes the privy box and the vault, and is equipped with a fly-proof seat and automatically closing lid. The urine and the fluids in the feces are absorbed by the sawdust, while the feces and paper remain within the barrel.

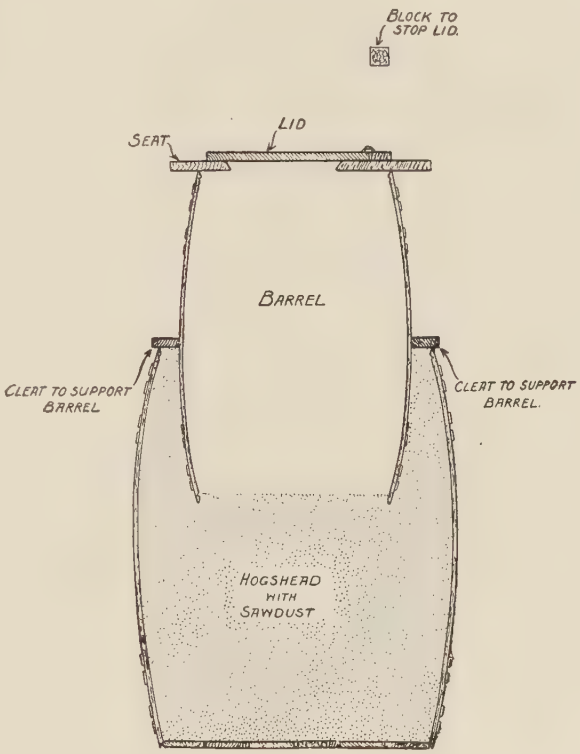

PLATE NO. 326
SAWDUST BARREL PRIVY
(Public Health Bulletin No. 111, 1921, Stiles.)

The barrel-sawdust privy, if properly constructed, is fly-proof and sanitary. One such privy will care for the excreta from five persons for about three months without emptying. When full it can be hauled to some suitable place and dumped, the sawdust being used to cover the contents. While sawdust is the best material for the separation of the feces and urine, satisfactory results can be obtained by the use of such substances as shavings, excelsior, leaves, chopped straw or sand. The barrel-sawdust privy is housed in an ordinary fly-proof privy building. Two or more barrels can be placed in one building if required.

The pit privy (*latrine*). The pit privy is the least desirable method of disposing of human excrement, but it is one that is quite often found in

use in public parks and reservations. As the name signifies, this privy consists of a pit in the ground over which is erected a building containing a privy box and seats. The pit or vault is of varying width and from four to ten feet in depth, depending on the nature of the subsoil and the level of the ground water table. The length depends upon the number of seats, about twenty to twenty-four inches being allowed for each seat, exclusive of partitions. In suitable earth the pit may be made without retaining walls, but if placed in ground that tends to cave inward, walls of masonry, concrete or wood must be provided (Plates 327, 329 and 330). Where retaining walls are used the bottom of the pit may be left open to the soil or a watertight vault may be made.

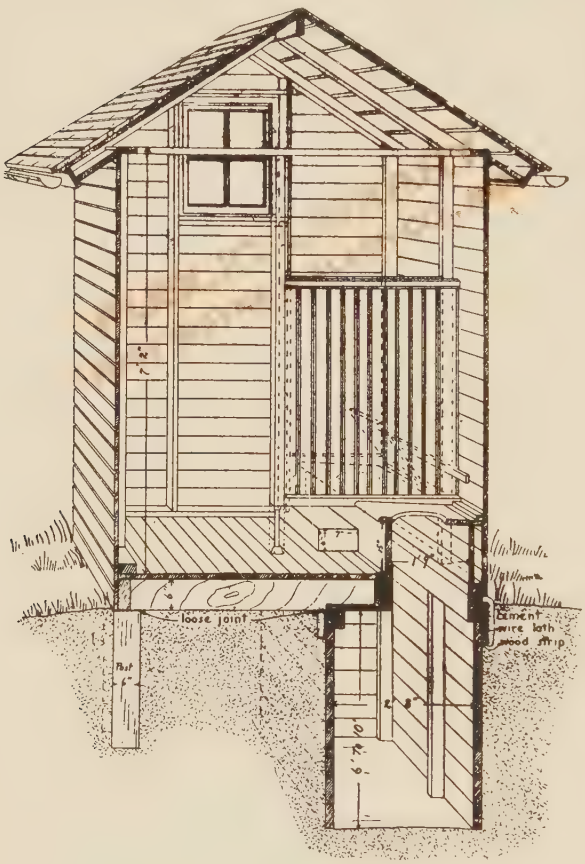

PLATE No. 327
PIT PRIVY WITH RETAINING WALLS OF WOOD
(Wisconsin State Board of Health.)

The privy building and box is essentially the same as that described for the sanitary privy (Plates 318, 319 and 328), except that the privy box has no bottom but opens directly into the pit. The building is ventilated and fly-proofed and the seats are separated by partitions.

When the pit is filled to within eighteen inches of the surface, the building may be removed and the pit filled to above the level of the ground with solidly tamped earth. If practicable the contents of the pit should be removed, carted away and buried, or otherwise disposed of and the building replaced. If a pit privy is to be used over a considerable period of time it should be built so that the contents can be removed without moving the building. In this type, the rear wall of the pit slopes backward so that access can be had to the pit from behind the rear wall of the privy building (Plates 328 and 330). The pit can then be cleaned by dipping or scooping out the contents. All pit privies should be at least one hundred feet distant from any stream or body of

water used as a source of water supply or for bathing purposes. Calcium hypochlorite should be added to contents of the privy pit at the rate of one pound per week for each person using the privy.

Chemical closets.[1] Chemical closets are patented devices designed to take the place of privies. Generally they consist of the following parts: (1) White vitreous china bowls similar to the untrapped bowls used on railway coaches, and with hinged seats and covers like flush toilets. (2) An iron tank coated on the inside with enamel that resists the action of the chemicals used. (3) An agitator inside the tank that is operated by a lever located near the toilet seat. (4) A ventilation pipe extending up from the opening in the rear of the bowl. (5) A chemical of high caustic content for liquefying the solid contents of the tank and for sterilizing the fecal matter and urine. (6) A urinal of practically the same design as that used in a water flushing system. The advantages of the chemical closet when supplied with proper amounts of chemicals and kept clean are as follows: (1) They can be located in buildings without producing odors. (2) They liquefy fecal matter and toilet paper. (3) The bacteria and intestinal parasites discharged into the tank are destroyed. (4) The contents of the tanks are in a liquid state, and can therefore be easily disposed of under almost all conditions. The disadvantages are:

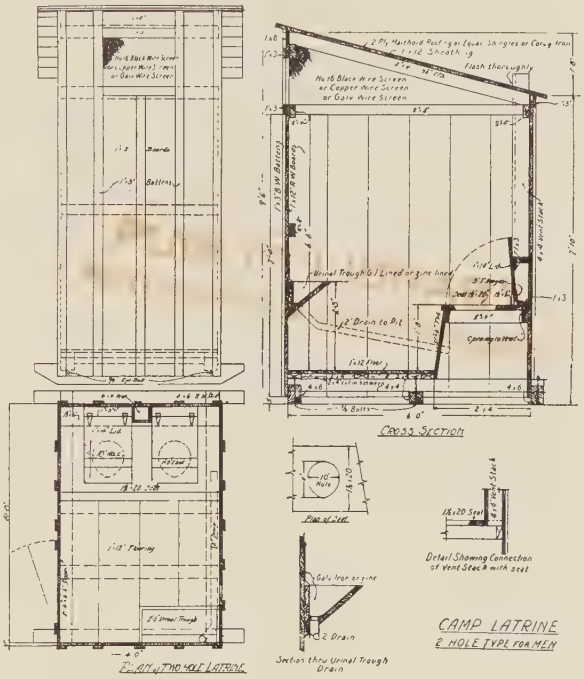
Flash thoroughly
Urinal Trough G.I. Lined or zinc lined
2" Drain to Pit
Cross Section
Detail Showing Connection of Vent Stack with seat
CAMP LATRINE
2 HOLE TYPE FOR MEN
Section thru Urinal Trough Drain
PLAN of TWO HOLE LATRINE

PLATE NO. 328
PIT PRIVY WITH URINAL
(Commission of Immigration and Housing of California.)

(1) The devices are patented, thereby increasing the cost and preventing construction with local material.

(2) Serious nuisances result from odors if the bowls and urinals are neglected, or chemicals are not used properly.

(3) A supply of chemicals must be kept on hand at all times. The cost of the chemicals is not excessive, but someone must be responsible for keeping enough chemicals for the closets on hand at all times.

[1] "Camp Sanitation," Draper and Hommon, United States Public Health Service.

(4) The direct open passages from the bowls to the tanks permit bottles, cans, etc., to be thrown into the tanks, and these cause trouble in cleaning.

(5) Chemical closets are more expensive to operate than privies, but they are less troublesome in cleaning, where the liquefied effluents from tanks are disposed of by subsurface drainage.

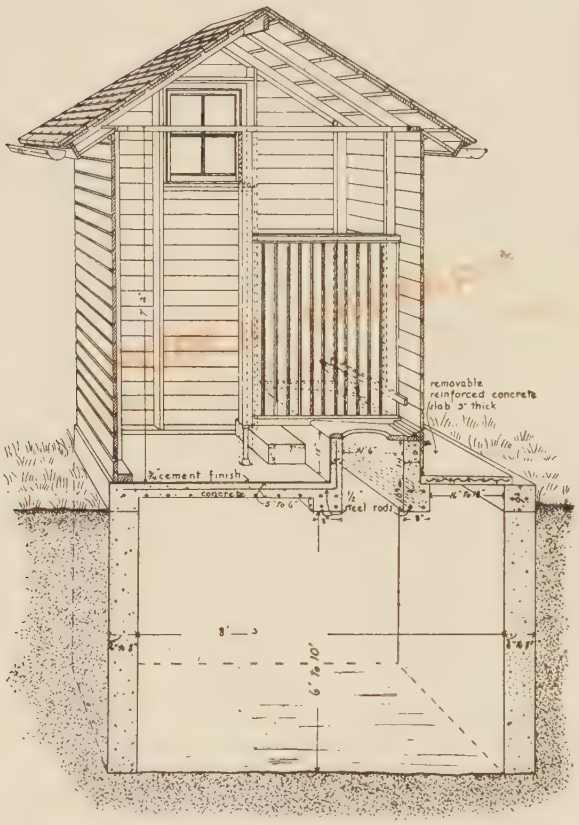

PLATE NO. 329
PIT PRIVY WITH A CONCRETE VAULT

Concrete slab at the rear can be removed and the contents of the vault taken out through the opening. (Wisconsin State Board of Health.)

Chemical closets have been found serviceable where contamination of ground, or ground water, cannot be permitted, and for camps, schools, churches, etc., but before this type of privy is adopted, it is absolutely necessary to determine whether funds will be available at all times for purchase of chemicals, and whether the toilets will receive intelligent supervision and attention. Many state and local boards of health have regulations governing the installation and operation of chemical toilets. These should be consulted before chemical closets are adopted.

The water carriage system. The water carriage system, consisting of flush toilets, underground sewers and some provision for treating or disposing of the raw sewage, is far superior to any other method of sewage disposal, not only as a means of protecting the health of the people using park and recreation areas but also from an æsthetic viewpoint. Well built, clean comfort stations or toilets equipped with flush toilets add greatly to the attractiveness of the areas and also to the contentment of the visitors. Where this type of sewage disposal can be constructed as a part of a community water system the construction will of necessity conform to the standards of the local system and will likely be installed under the direction of the local sanitary and construction engineers.

The suggestions presented in the following pages apply particularly to areas where it is not possible to connect with a community water and sewer system such as in outlying parks and reservations, and camps, picnic places, restaurants, inns, clubhouses, etc., therein. In any case the installation should be done by a competent engineer. The size of the sewer pipe or pipes, the number and location of the manholes, the grade of the sewer lines will depend upon and be modified by the volume of sewage to be transported, the topography of the terrain, and to some extent by the method of ultimate disposal. Where only a few buildings are to be connected with sewers the installation of a water carriage system ordinarily presents no great difficulty. In organized camps, tourists' camps, inns, etc., the sewage will consist of waste from the toilets, kitchens, baths, lavatories. The plumbing fixtures should connect with a soil pipe, which is a two or four-inch cast-iron pipe extending from the house-connection up through the roof and receiving the wastes from the toilets and other fixtures. The soil pipe also provides ventilation for the house-connection sewer and fixtures.

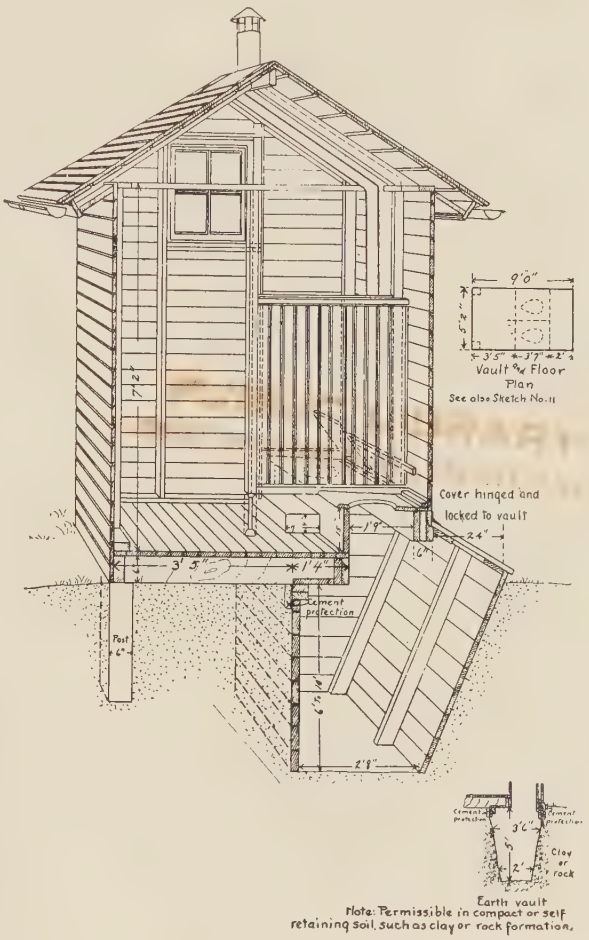

PLATE NO. 330

PIT PRIVY WITH RETAINING WALLS OF WOOD

The contents of the privy are removed from opening at the rear. (Wisconsin State Board of Health.)

The house-connection is the sewer which receives the sewage from the soil pipe. It should be six inches in diameter and may consist of vitrified salt-glazed clay or cast-iron pipe. The house-connection should be water-tight to prevent the entrance of storm water, and if vitrified clay pipe is used the joints should be cemented. If only one building is connected with the sewerage system or if each building is provided with a septic tank, the six-inch house-connection is carried to the point of disposal or treatment. If more than one building is to be

connected, then the house-connections lead to a common sewer which in most cases will drain directly to the place of disposal or to the treatment plant. Vitrified clay pipe is usually used for the common sewer, which should be not less than eight inches in diameter. The house-connection pipe is joined to the common sewer by a Y branch. All joints should be cemented and made water-tight. All house-connections should be laid on a minimum grade of 1:40 in order that deposits may be prevented. The velocity of the flow in a common sewer when running one-half full should be not less than two and one-half nor more than eight feet per second. Manholes, or inspection holes, should be placed at turns in the sewer line, or every three hundred feet if the sewer is straight, in order to facilitate inspection and cleaning.

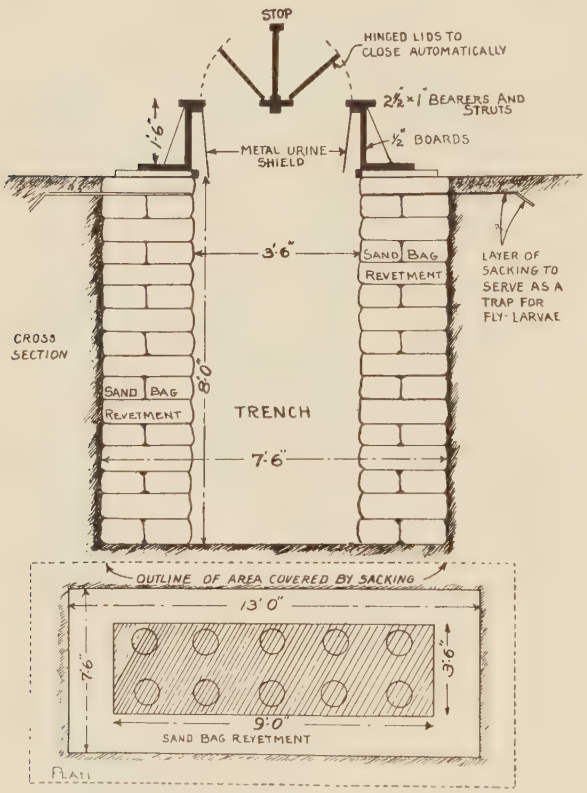

PLATE NO. 331
ARMY TRENCH LATRINE

Built without partitions between the seats. Suitable for boys' camps.

In order to be efficient and economical in operation, flush toilets must be of good construction and correctly installed. The construction of the toilet buildings will vary according to local circumstances, but whatever the design may be they should be fly-proof, well ventilated, easily cleaned, and conform to the local health laws and regulations. One seat should be provided for every five to ten people, but where the question of expense is of importance this may be reduced to one seat for every ten to twenty persons. Separate buildings must be provided for men and for women, and the individual seats should be separated by partitions.

Sewage treatment. The excreta collected by toilets should be promptly disposed of in such a manner that it will not endanger the health of man or create a nuisance. It is highly putrescible and must be regarded as containing disease-producing germs. The object of sewage treatment is to convert the unstable and readily putrescible organic material into stable and non-putrescible substances, and to prevent the transmission to man of any disease-producing germs which it may contain.

The raw sewage may be disposed of, if it is not possible to discharge it into a community sewer system, by dilution or by treatment in a septic tank. The effluent from the septic tank may be disposed of by dilution, subsurface irrigation, or by filtration with subsequent disposal by dilution or broad irrigation.

Disposal by dilution. In disposal by dilution the raw sewage is discharged directly into a body of water sufficiently large so to dilute the sewage that no harmful results are produced. If a body of water such as a lake, bay or stream is available, disposal by dilution is often feasible, provided it can be accomplished without polluting any source of drinking water or infringing upon riparian rights of adjacent landowners. Care must also be taken to avoid contaminating bathing beaches, and if the sewage is discharged into tidewater, possible injury to shellfish must likewise be considered. The winds, currents and tide will often carry sewage for comparatively long distances from the point of disposal.

Where a small stream is to be utilized for diluting the sewage, it must be determined that the minimum flow of water in the stream is sufficient to produce a satisfactory dilution. The stream should have a minimum flow of 0.75 to one cubic foot per second for each one hundred persons, and the flow must be constant and even, or malodorous deposits will occur along the banks and the bottom of the stream. The sewer should extend out from the shore to a point where the depth of the water and the distance from the shore is sufficient to permit of ample dispersion of the sewage. Whenever

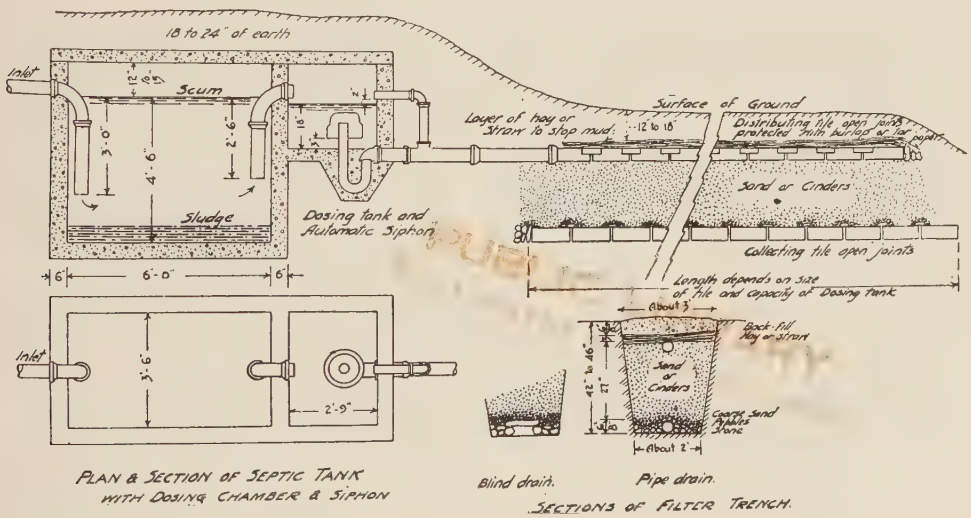
18 to 24" of earth
Inlet
Scum
Sludge
Dosing tank and Automatic Siphon
Surface of Ground
Layer of hay or straw to stop mud
Distributing tile open joints protected with burlap or tar paper
Sand or Cinders
Collecting tile open joints
Length depends on size of tile and capacity of Dosing Tank
Back fill hay or straw
Sand or Cinders
Coarse Sand Pebbles Stone
Plan & Section of Septic Tank with Dosing Chamber & Siphon
Blind drain.
Pipe drain.
Sections of Filter Trench.

Plate No. 332

PLAN AND SECTION OF A SMALL SEPTIC TANK SHOWING DOSING TANK AND AUTOMATIC SIPHON

The effluent is disposed of by trench filtration. (United States Public Health Service, Crohurst.)

disposal by dilution is contemplated the local or state health authorities should be consulted in regard to the location of the outlets.

Many service areas in parks and reservations are so located that it is impracticable to dispose of the raw sewage by dilution, and some other form of treatment must be employed. In such instances the most feasible method of treating sewage involves the use of some form of a septic tank. In a septic tank the solid portions of the sewage are liquefied, certain of the unstable substances are reduced to stable compounds, and many of the disease-producing germs are killed. These changes are produced by the action of bacteria which live in the depths of the tank.

The ordinary septic tank consists of a closed concrete basin, through which the sewage flows at a rate which will permit a certain amount of

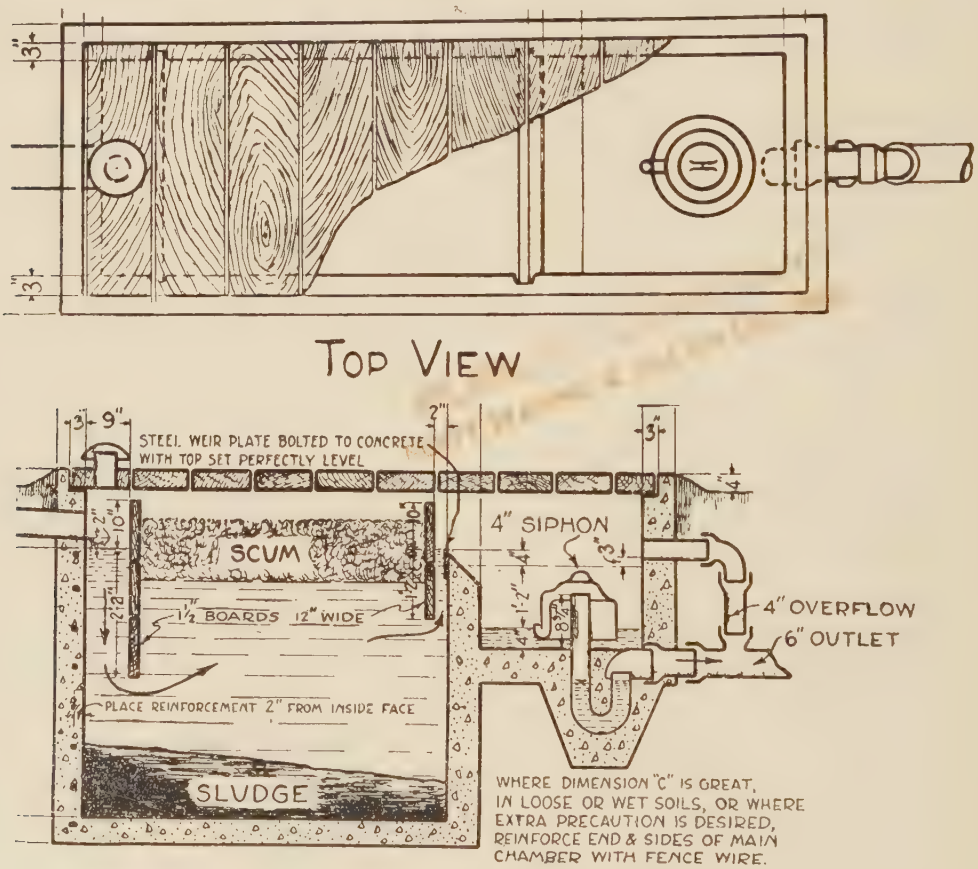
TOP VIEW
STEEL WEIR PLATE BOLTED TO CONCRETE WITH TOP SET PERFECTLY LEVEL
SCUM
4" SIPHON
4" OVERFLOW
6" OUTLET
1½" BOARDS 12" WIDE
PLACE REINFORCEMENT 2" FROM INSIDE FACE
SLUDGE
WHERE DIMENSION "C" IS GREAT, IN LOOSE OR WET SOILS, OR WHERE EXTRA PRECAUTION IS DESIRED, REINFORCE END & SIDES OF MAIN CHAMBER WITH FENCE WIRE.

PLATE NO. 333

SECTION THROUGH SEPTIC TANK SHOWING THE POSITION OF THE BAFFLE BOARDS WHICH ARE USED INSTEAD OF AN INVERTED TEE

(Pennsylvania State Department of Health.)

Septic tank for 25 persons: length, 9 feet; width, 4 feet 6 inches; depth below flow line, 4 feet 6 inches. Siphon chamber of such size as to discharge the effluent from the tank from one to three times each 24 hours, according to local conditions.

decomposition and liquefaction. It should be placed as close as practicable to the source of the sewage, but in a locality where the odors generated in the tank will not become obnoxious. Small installations are best placed below the surface of the ground, although this is not necessary for the satisfactory operation of the tank. For the construction details of a septic tank see Plates 332, 333 and 334. The size and shape of the septic tank may vary according to the circumstances, and expert advice regarding their construction can usually be obtained from local or state health authorities. The tank proper should have a capacity of five cubic feet per person, but it is not advisable to use a tank containing less than seventy-five available cubic feet. Such a tank will handle the sewage for fifteen persons or from seven hundred and fifty to one thousand gallons of sewage per day. The siphon chamber may be an integral part of the tank or it may be built as a separate unit so that it will receive the effluent from several tanks. The latter arrangement is feasible when a large subsurface irrigation field or intermittent filter is used for the disposal of the effluent. All septic tanks must be properly ventilated and have a manhole opening into the tank.

A certain proportion of the solids in the sewage settle out and remain in the tank as sludge. Ordinarily, the sludge must be removed when it fills one-third of the tank, which usually occurs at intervals of from six months to two or three years. To clean the tank the overlying liquid is pumped out, after which the sludge is removed with a scoop or by pumping and carted away and buried at some convenient place where it will not contaminate a water supply. During hot-dry weather the sludge can be spread in a thin layer on the ground and dried until it can be handled with a spade. A scum will form upon the surface of liquid in the septic tank and this should be occasionally broken up with a stick or pole and allowed to settle to the bottom. Scum should not be permitted to accumulate to a depth of more than six inches. As septic action is dependent upon the growth of bacteria in the sludge, it may be delayed for a time when a new tank, or one that has been idle for some time, is placed in service. During this time the tank acts only as a settling basin, but, even so, a considerable percentage of the solids is removed and subsequent treatment of the sewage rendered much simpler.

The effluent from a septic tank is putrescible and contains many bacteria, and must be disposed of in such a manner that it will not create a nuisance or constitute a danger to the health of man. This may be accomplished in one of several ways, either by subsurface irrigation, filtration, or dilution in a nearby body of water.

Subsurface irrigation (*absorption fields*, *distribution fields*). Where a loose porous soil is available, subsurface irrigation in the form of an absorp-

tion field offers the best means of disposing of the effluent from small septic tanks. An absorption field consists of underground lines of field tile laid with open joints, through which the effluent from the septic tank seeps into the adjacent soil (Plates 335, 336 and 337). The liquid thus brought into contact with the soil is absorbed and, under the proper circumstances, an ultimate disposal is satisfactorily effected.

A water-tight pipe of cast-iron or vitrified clay four or six inches in diameter is laid from the septic tank or siphon chamber to the absorption field. This pipe should have a fall of two per cent and terminate in a diversion chamber (Plate 336). The tile lines of the absorption field are laid at varying distances apart, usually four to fifteen feet, according to the nature of the soil, and about one foot below the surface of the ground (Plate 337). The tile lines should have a fall of about two inches in one hundred feet. As a rule four-inch tile is used, the number of rows of tile and the length of the tile lines depending upon the number of people to be served. The joints of the tile drains are separated from one-fourth to one-half inch and the tiles are laid in a bed of broken stone, gravel or other coarse material, which will aid in absorption and prevent earth from entering at the joint. Approximately fifty lineal feet of four-inch tile will be required for each person contributing to the system, but this may vary from thirty to one hundred feet depending upon the absorbing qualities of the soil.

The proper amount of sewage is released into the tiles at regular intervals by means of an automatic siphon or dosing chamber (Plate 334).

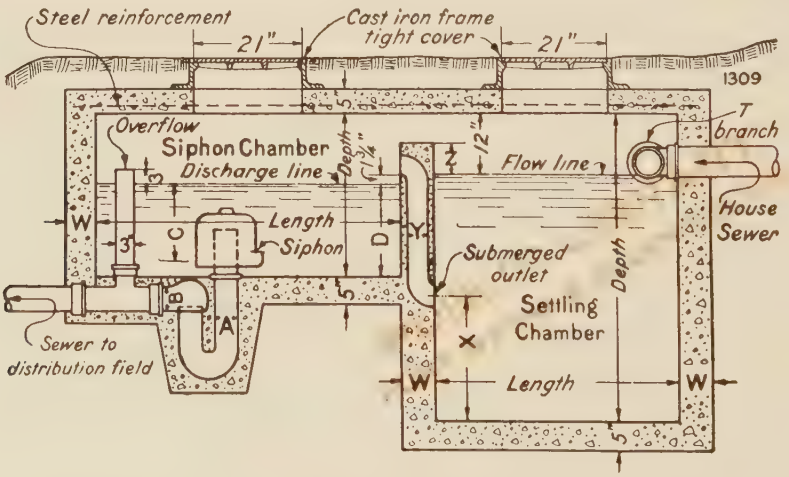

PLATE NO. 334

SEPTIC TANK AND SIPHON CHAMBER FOR TWENTY TO TWENTY-FIVE PERSONS

(Farmers' Bulletin No. 1227, United States Department of Agriculture.)

Septic tank: length, 6 feet; width, 3 feet 6 inches; depth below flow line, 5 feet 6 inches; W, 8 inches; X, 2 feet 9 inches; Y, 5 inches; Z, 8 inches.

Siphon chamber: length, 10 feet; depth, 2 feet 10 inches; width, 3 feet 6 inches; A, 4 inches; B, 4 inches; C, 17 inches; D, 20¼ inches.

The automatic siphon consists essentially of a small tank equipped with a U trap with the short leg of the U connected with the drain and the long leg covered with a bell. The trap is filled with water, and as the effluent from the septic tank flows into the siphon chamber the weight on the column of water in the trap gradually increases until a portion is forced out into the drain pipe. This starts the siphon and the liquid continues to flow out until the pressure is equalized by the entrance of air under the bell. The siphon chamber should have an overflow pipe connected with a drain to carry away the effluent in case the siphon fails to function. It should also have a manhole and a fresh air vent (Plate 335).

The capacity of the siphon chamber should be such that the amount of liquid discharged by siphonage at any one time will fill all the tiles of the absorption field connected therewith. The capacity of the different sizes of drainage tile per lineal foot is as follows:

Diameter of tile in inches	*Volume in gallons per one lineal foot*
3 inches	.367
4 inches	.652
5 inches	1.02
6 inches	1.46

Thus an absorption field designed to dispose of the sewage produced by twenty-five individuals, allowing fifty lineal feet of four-inch tile per person, would have a capacity of eight hundred and fifteen gallons, or about one hundred and thirty cubic feet of effluent. The siphon chamber supplying this field should be so built that it will discharge this amount of effluent at one time. For other than the smallest installations, two or more absorption fields should be available, so that they may be dosed alternately and overloading prevented.

Where more than one absorption field is used the effluent passes from the siphon chamber through a water-tight pipe to a diversion chamber

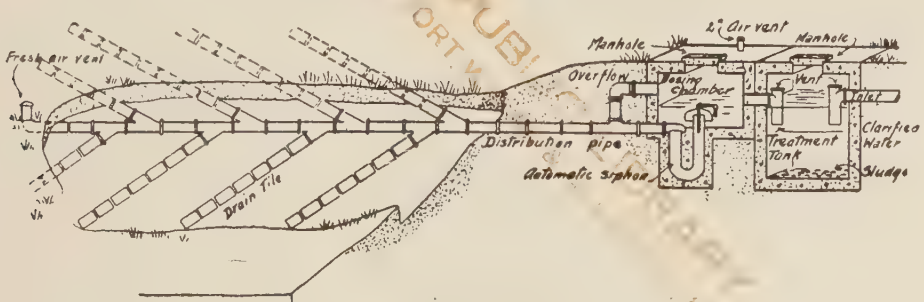

PLATE NO. 335

SEPTIC TANK WITH DOSING (SIPHON) CHAMBER AND ABSORPTION FIELD

Shows method of ventilation. (Wisconsin State Board of Health.)

(Plates 337 and 339), in which by the use of stop boards the sewage can be diverted into either of the fields. An absorption field should be dosed not more than three times in each twenty-four hours.

In the subsurface irrigation method of disposal, care must be exercised to prevent the contamination of water supplies through pollution of the ground water. Overloading, with the subsequent clogging of the soil, must be avoided, and a suitable soil must be available. A loam or sandy soil or loam mixed with sand or gravel will be found to be the best type for this purpose. A clay soil is useless and any attempt to utilize such soil for an absorption field is sure to result in needless expense and trouble. Not infrequently the nature of the soil, the proximity of water supplies, or lack of space, will prohibit the use of this means of disposing of the effluent from septic tanks. Under such circumstances other methods of disposal must be adopted, and as a rule underground filtration trenches or an intermittent sand filter will give satisfactory service.

Underground filtration trenches. Where only clay or other non-absorbent soil is available filtration trenches can often be used in lieu of an absorption field (Plates 332 and 340). Filtration trenches are dug about three feet in depth and at the bottom of each trench is placed a collecting drain of open joint tile surrounded with broken rock ranging from one-half to one and one-half inches in diameter. The trenches are filled with sand, gravel or earth to within a foot of the surface, where another line of open joint tile is placed, likewise surrounded by broken rock, which receives the effluent from the siphon chamber. The upper tile lines are installed and function in the same manner as the tile lines of an absorption field, except that the effluent instead of being absorbed by the adjacent soil filters down through the material in the trench into the collecting underdrains, through which it may empty into ditches or may be connected with a main drain through which the effluent is carried to a stream or other body of water to be disposed of by dilution. Four-inch field tile is usually used for both the upper

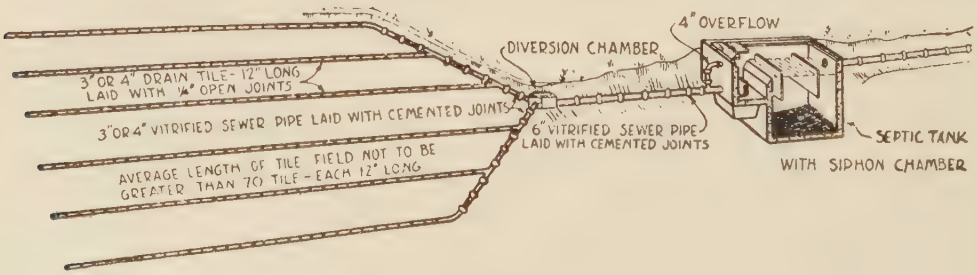
4" OVERFLOW
DIVERSION CHAMBER
3" OR 4" DRAIN TILE - 12" LONG LAID WITH ¼" OPEN JOINTS
3" OR 4" VITRIFIED SEWER PIPE LAID WITH CEMENTED JOINTS
AVERAGE LENGTH OF TILE FIELD NOT TO BE GREATER THAN 70 TILE - EACH 12" LONG
6" VITRIFIED SEWER PIPE LAID WITH CEMENTED JOINTS
SEPTIC TANK WITH SIPHON CHAMBER

PLATE NO. 336

SEWER DISPOSAL SYSTEM WITH SEPTIC TANK, SIPHON CHAMBER, DIVERSION CHAMBER AND ABSORPTION FIELD

(Pennsylvania Department of Health.)

tile line and the collecting drains. If a main drain is required this should be a six or eight-inch water-tight sewer.

Intermittent filtration. An intermittent filter consists of a bed of sand from twenty-six to thirty-six inches in depth, resting upon a layer of graded

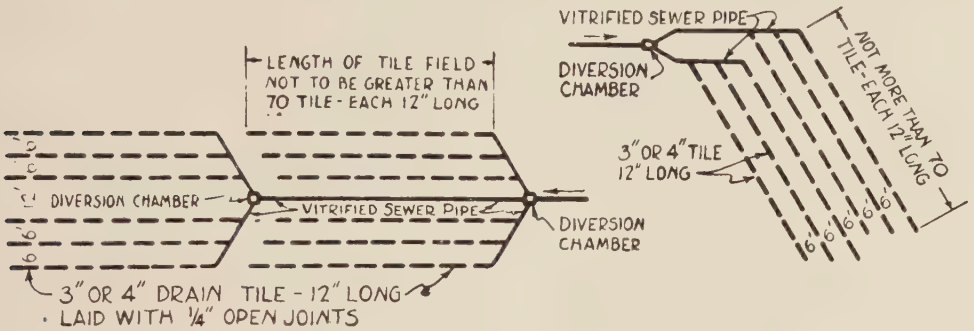
VITRIFIED SEWER PIPE
DIVERSION CHAMBER
LENGTH OF TILE FIELD NOT TO BE GREATER THAN 70 TILE - EACH 12" LONG
NOT MORE THAN 70 TILE - EACH 12" LONG
3" OR 4" TILE 12" LONG
DIVERSION CHAMBER
VITRIFIED SEWER PIPE
DIVERSION CHAMBER
3" OR 4" DRAIN TILE - 12" LONG LAID WITH 1/4" OPEN JOINTS

PLATE NO. 337
TILE FIELDS FOR SUBSURFACE IRRIGATION
(Pennsylvania Department of Health.)

broken stone or gravel, in which are placed underdrains to carry away the filtered sewage (Plate 341). About one acre of filter surface will be required for seven hundred and fifty persons.

The walls of the filter are usually made of earth, either as an embankment or as the walls of a pit. The underdrains consist of four or six-inch open joint tile placed from twenty to thirty feet apart on the floor of the

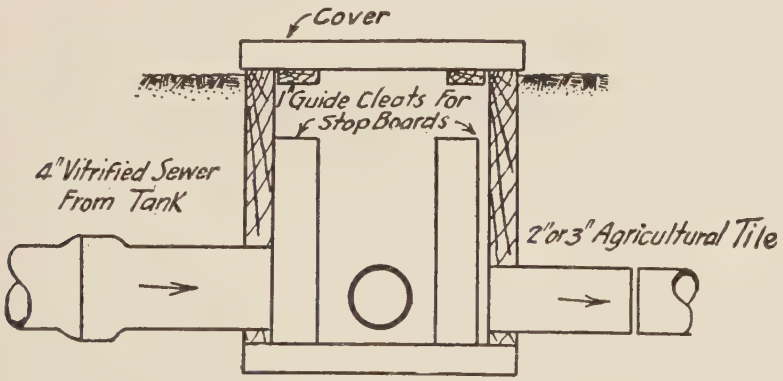

PLATE NO. 338
SECTIONAL VIEW OF A DIVERSION CHAMBER SHOWING GUIDES FOR STOP PLANKS
(Commission of Immigration and Housing of California.)

filter. The underdrains have a slight fall towards one end of the bed, and lead into a main drain of tile or pipe, eight inches in diameter, through which the effluent is carried away. On the floor of the filter is placed a six-inch layer of broken rock or gravel, ranging from one to two inches in

diameter. Above this layer is another layer of gravel from four to six inches in depth and composed of stones one-fourth to three-fourths inch in diameter, with the finer ones on top. Above the gravel is placed a bed of sand

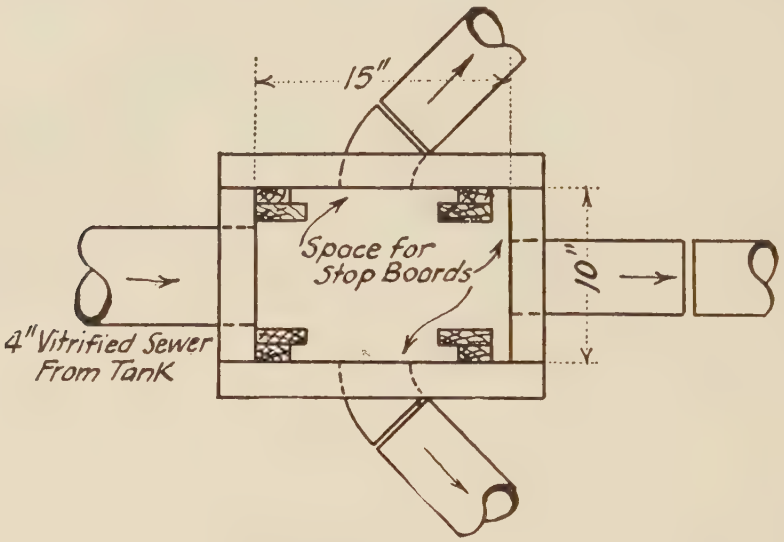

PLATE NO. 339
PLAN OF DIVERSION CHAMBER SHOWN IN PLATE NO. 337
(Commission of Immigration and Housing of California.)

from thirty to thirty-six inches in depth. The sand grains should have an effective size of from 0.25 to 0.35 millimeter and a coefficient of uniformity of from two to four.

If a sandy soil is available, filters can be constructed by stripping away the upper layer of debris, evacuating any rock, clay or loam pockets, and placing the underdrains at a depth of from six to eight feet. Such a filter should be divided into beds by earthen embankments, which can be made of the strippings removed from the surface.

Shallow, flat-bottomed wooden troughs are laid on the surface of the

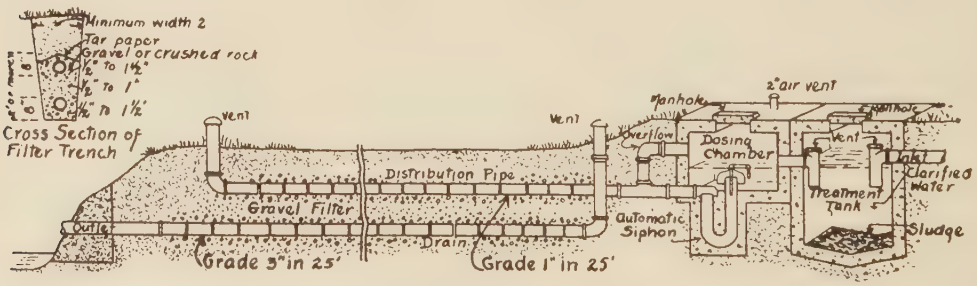

PLATE NO. 340
SMALL SEPTIC TANK SHOWING METHOD OF USING FILTER TRENCH AND VENTILATION SYSTEM
(Wisconsin State Board of Health.)

filter to receive the effluent from the septic tank. These troughs are arranged in a "crow foot" pattern (Plate 342). The width of the troughs and the number of lateral troughs vary according to the amount of sewage to be applied, and the size of the filter. The width of the main trough is greater at the effluent end and decreases beyond each pair of side troughs. The sides of the troughs are from three to five inches in height. Holes are bored in the sides to permit the ready egress of the sewage which flows through the holes as well as over the top of the sides.

Septic tank effluent is applied to an intermittent filter by means of a siphon chamber in the same manner as described for subsurface irrigation. A number of small septic tanks may empty into one siphon chamber located near the filter bed. If more than one filter bed is used a diversion chamber should be installed (Plates 337 and 339). A filter bed is dosed from one to three times each twenty-four hours, and the siphon chamber must be adjusted accordingly. The sewage overflows onto the surface of the filter bed, through holes in the sides and over the walls of the troughs, to a depth

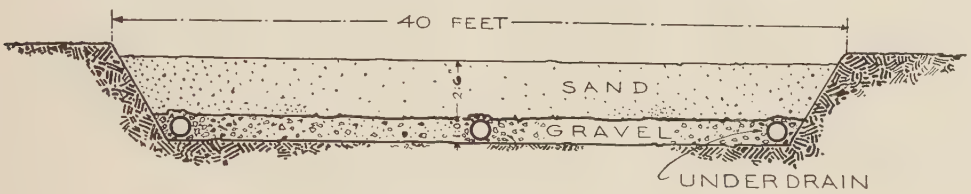

PLATE NO. 341
CROSS SECTION OF INTERMITTENT FILTER

of about three inches or less, and passes down through the filter where it undergoes nitrification and is rendered more stable.

Occasionally, a filter will clog and filtration will be interfered with by the matting of the surface of the sand. When this happens the surface of the filter should be thoroughly raked or even spaded. If the service area is operated during the winter in climates where freezing is apt to occur, the surface of the filter should be ploughed into furrows. On a furrowed filter the sewage is applied underneath the ice which forms over the furrows.

It is better to have several small filters than one large one, so that there will be a longer resting period. Thus, approximately three thousand square feet of filter surface would be required for the effluent from septic tanks in which the sewage for fifty persons is treated. A rectangular filter bed forty by seventy-five feet would provide the necessary surface, but more efficient service will be obtained from two beds thirty by fifty feet each or three beds twenty by fifty each. The small rectangular bed also has the advantage that the underdrains can be placed one on each side, and it is also much easier to secure an even distribution of the sewage on the

surface of a small bed. Intermittent filter beds will give rise to a certain amount of odor, particularly in rainy weather. For this reason the filter should be located five hundred feet or more away from the nearest camp or house and on the side opposite to the prevailing winds.

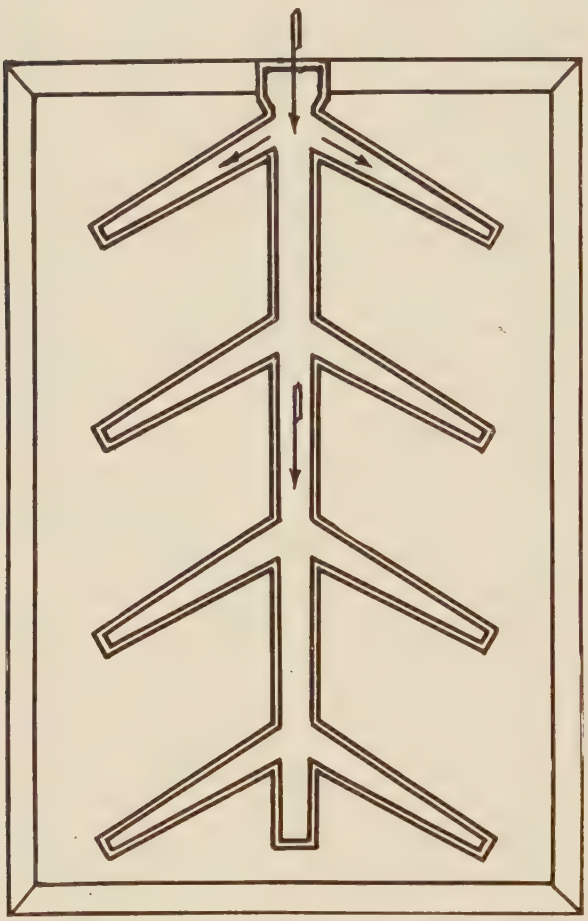

PLATE NO. 342
SCHEMATIC DRAWING OF CROW FOOT DISTRIBUTOR FOR INTERMITTENT FILTER

The effluent from an intermittent filter may be discharged into a stream, an open ditch, or a number of such ditches (broad irrigation). If several filter beds are installed, the underdrains from each may discharge into a main drain which in turn carries the effluent to the stream or other point of ultimate disposal. If the septic tank and filter are properly operated, the effluent is not apt to produce a nuisance.

Disposal by dilution. The effluent from a septic tank can be disposed of by dilution in the same manner as raw sewage (see page 856).

Cesspools. The disposal of raw or treated sewage in a cesspool is, in general, a very undesirable method to use in parks and reservations. In practice the cesspool usually functions in an unsatisfactory manner and is decidedly unsanitary. If a porous soil is available which will readily absorb the liquid, a modified form of leeching cesspool, as shown in Plate 343, will give satisfactory service. This type is known as a subsurface sewage filter and consists of a circular pit containing broken stone over which is a layer of sand. Lines of open joint tile carry the filtered sewage into adjacent soil, where it is absorbed. The pit has dry masonry walls and an earthen floor.

Disposal of urine. Urinals should be placed in all toilets or privies used by men and boys and will be found to be of great assistance in preventing the soiling of the seats and in keeping the toilet in a sanitary condition. The urinal may consist of a simple trough, as shown in Plate 344,

or one of the more elaborate wall types may be installed. If the sanitary privy is used it will be found more satisfactory to separate as much of the urine as possible from the feces by means of a urinal connected with a soakage pit. If for any reason a soakage pit cannot be used in connection with a sanitary privy, and the feces are to be burned or buried, the urine should be collected in one or more receptacles (pails) separate from the feces, as urine interferes markedly with the incineration of feces and also increases the difficulty incident to burial in trenches or pits.

The urinal in a L. R. S. privy should drain into the liquefying tank (Plate 323). In the pit privy the urinal, as a rule, empties directly into the pit (Plate 328), or it may, in the case of water-tight vaults, be connected with a soakage pit. Where flush toilets are used the urinals are connected with the sewer.

Soakage pits. A very efficient soakage pit consists of a pit from four to eight feet square by four to ten feet deep, filled with broken rock to within six to twelve inches of the top (Plate 345). Above the rock is placed a layer of straw, matting or burlap, and the pit is then filled to the top with sand.

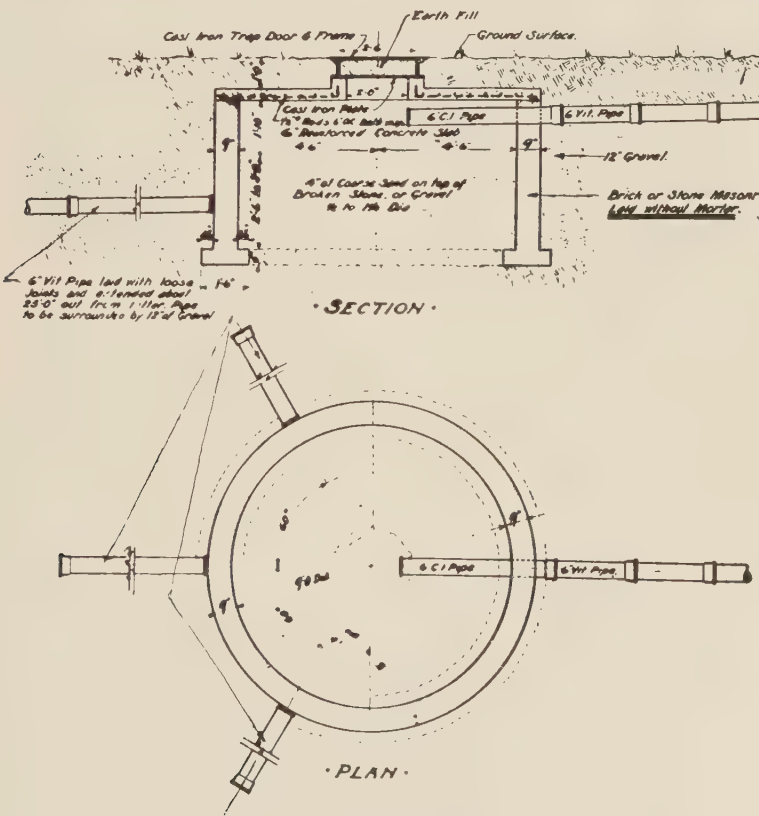

PLATE NO. 343
SUBSURFACE SEWAGE FILTER

The urine is carried in a pipe from the urinal or from a number of urinals into the pit a few inches below the sand layer. The urine passes out of the pit into the adjacent ground. The soil surrounding the pit must be capable of absorbing the urine, as a soakage pit will not function properly in impermeable soil such as clay. In suitable soil a soakage pit, if not overloaded, will care for the urine for an indefinite period without creating a nuisance.

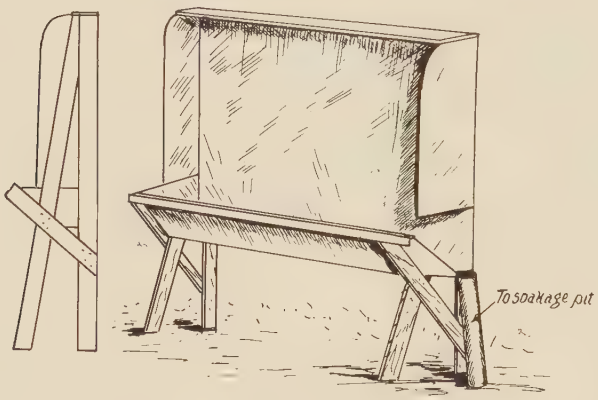

PLATE NO. 344
URINAL FOR USE IN CONNECTION WITH THE SOAKAGE PIT OR PRIVY

Sanitation of toilet and privy buildings. All toilet or privy buildings should be kept scrupulously clean. Toilet paper should be provided and the use of newspapers or other materials in lieu of toilet paper should be strictly forbidden. The floors should be swept daily and the walls cleaned at frequent intervals. Privy seats, the exterior of the privy boxes, and toilet bowls should be scrubbed

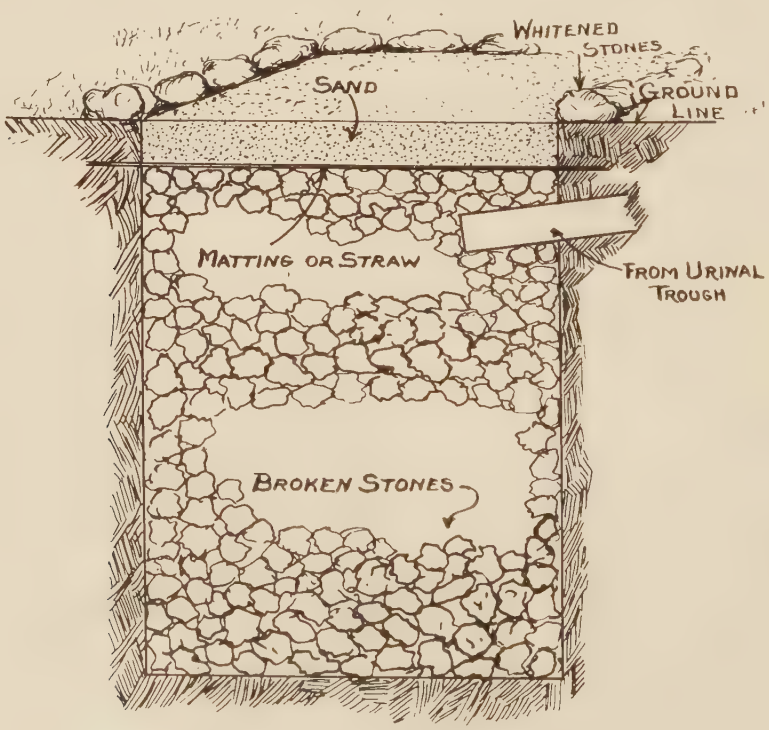

PLATE NO. 345
URINE SOAKAGE PIT

with hot water and soap several times each week. Urinals should likewise be thoroughly scrubbed at frequent intervals. If wooden urinal troughs are used they can be deodorized by painting with a solution of cresol.

Privy and toilet buildings should be adequately lighted by means of windows, and artificial lights should be provided for use at night. Good sanitary conditions are much easier to maintain if both the interior and the exterior of the buildings are painted.

Toilets or privies intended for each sex should be plainly labeled with painted signs.

Disposal of bath water. In connection with organized camps, tourists' camps, inns, clubhouses, etc., the disposal of bath water becomes a matter of considerable importance. Where a water carriage sewer system is in use, the bath water is carried away by the sewers and disposed of with other sewage, either by dilution or by a septic tank. If this method cannot be used then the bath water can be removed by drains leading to a subsurface irrigation field, or a soakage pit. If conditions permit, the bath water may be discharged directly to a stream or allowed to flow in open ditches until absorbed by the soil. While bath water is not very putrescible, it will create a nuisance if not promptly removed. Wash water from lavatories or ablution stands is similar to bath water, but as a rule contains more soap, and consequently should be passed through a grease trap. A disposal system for wash water is shown in Plate 346.

Disposal of liquid kitchen wastes. The cooking water, dishwater and other liquids resulting from culinary activities about camps, inns, club-

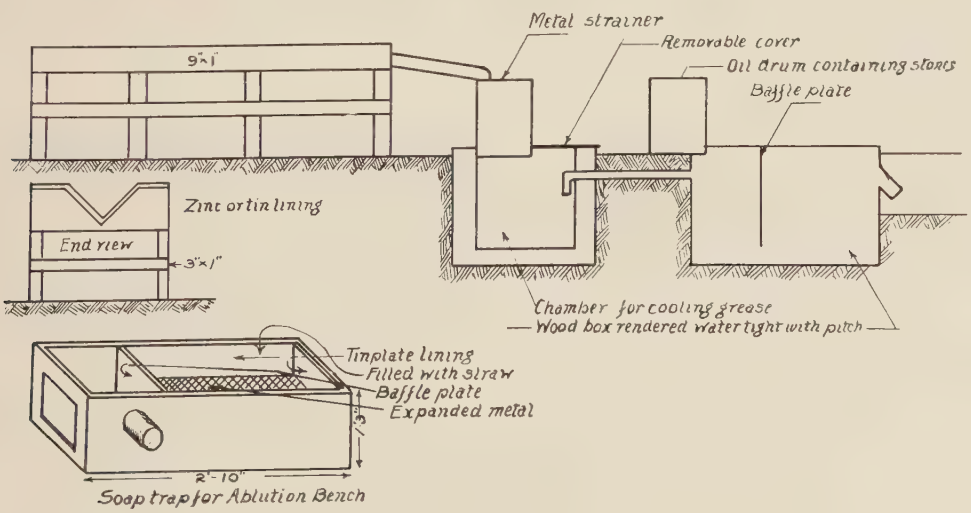

PLATE NO. 346

ABLUTION BENCH AND METHOD OF DISPOSING OF WASH WATER

Water from the baffle tank is allowed to run into a soakage pit, absorption field or ditch. Design for camp use.

houses, etc., always contain a considerable amount of organic matter which is putrescible and will constitute a nuisance if allowed to accumulate. The difficulties of disposal are increased by the large grease and soap content, but if the greater proportion of these substances is removed, kitchen wastes can then be disposed of in much the same manner as bath water, either by draining into a sewer, or by subsurface irrigation, or by means of a soakage pit. It is not advisable to dispose of kitchen wastes in open ditches unless these are well removed from the vicinity of the building or buildings.

A simple grease trap consists of a container filled with straw or a similar material through which the greasy liquid is filtered into a small cooling tank where the water is retained for a short time (Plate 347). The cooling tank has an inlet near the top and the outlet well below the surface of the liquid. As the water passes through the cooling tank the grease solidifies, rises to the surface and can be skimmed off and burned or buried. A portion of the grease is retained by the filtering material which is removed at intervals and burned. Grease tends to clog the soil surrounding a soakage pit or underground tiles, and thus interferes with absorption. It will also decrease the efficiency of a septic tank. All kitchen fixtures which drain into a septic tank, soakage pit, or subsurface irrigation field should be equipped with grease traps. If the kitchen wastes are poured directly into a soakage pit a grease pit can be placed on top of the pit (Plate 348).

Disposal of garbage, rubbish and manure. Decomposing garbage is malodorous and unsightly, and accessible garbage serves to attract flies to the

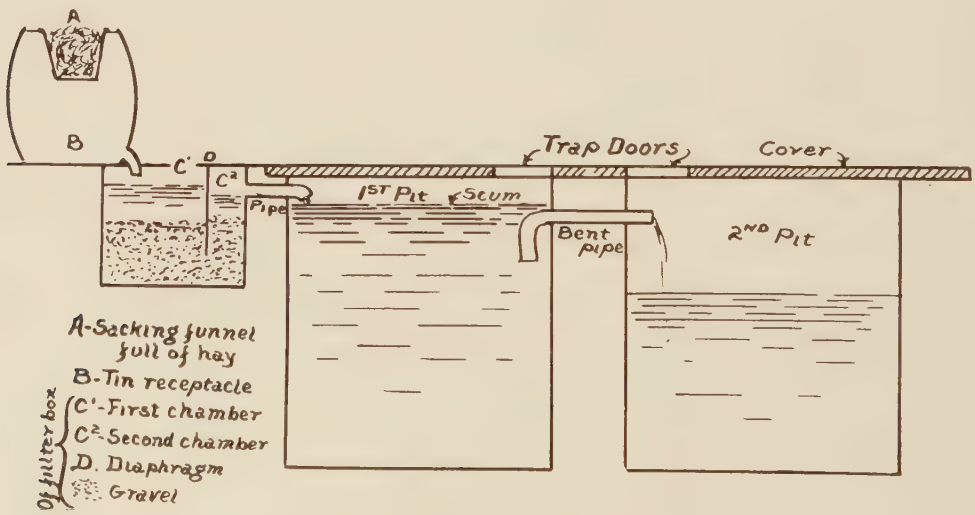

PLATE NO. 347

SKETCH OF GREASE TRAP AND SOAKAGE PITS FOR KITCHEN WASTES

The debris removed by A. The grease cools and solidifies in the first and second chambers.

vicinity of refreshment stands, picnic grounds, kitchens and dining rooms of camps, inns and clubhouses. Garbage should be collected in galvanized iron cans or buckets having well-fitting covers. Ordinarily, it is advisable to separate the edible from the non-edible garbage, placing the former in one can while such material as papers, coffee grounds, egg shells, etc., are deposited in another can.

Each garbage can should have a painted label stating the kind of garbage to be deposited therein. Garbage cans may be painted white, but should not be whitewashed. The cans should be placed on stands (Plate 349), and where a large number of cans are used, or where flies are prevalent, these stands should be within a screened inclosure. Garbage cans should be emptied daily, or at least three times a week. The contents should not be removed from the cans at the stand, but the full cans should be hauled to the place of disposal and there emptied so as to avoid spilling the garbage near the places where it was produced. If garbage wagons are used they should be water-tight to obviate leakage, and any garbage spilled on the ground while the cans are being emptied should be immediately removed. When emptied the cans should be thoroughly washed and either scalded or scrubbed with water containing lye.

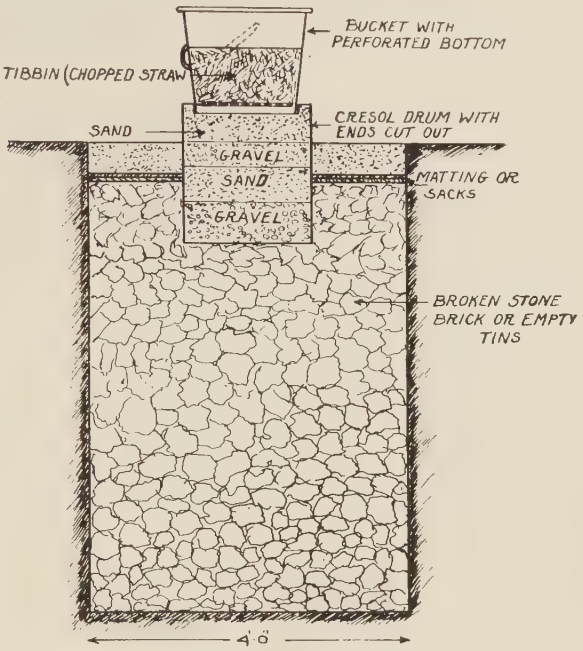

PLATE NO. 348. SOAKAGE PIT FOR THE DISPOSAL OF KITCHEN WASTES

The debris and part of the grease is retained by the straw, gravel and sand in the upper compartments. The soil, straw, gravel and sand can be removed at intervals and replaced with clean material.

Incineration. Incineration offers the most practical method by which garbage can be destroyed. A large number of garbage incinerators have been devised, the principal object being that of obtaining as much heat as possible with a small amount of fuel.

The Williamson Multiple Shelf Incinerator. The Williamson Multiple Shelf Incinerator renders satisfactory service with a minimum amount of fuel (Plate 350). It is made of sixteen-inch gauge black sheet iron and is about five feet high by two or two and a half feet square. Inside is a grate over an ash pit, and above the grate are six shelves arranged as shown in

Plate 350. The grate is made of three-eighths-inch pipe or iron bars laid one-quarter inch apart, so that the dried garbage will not fall between

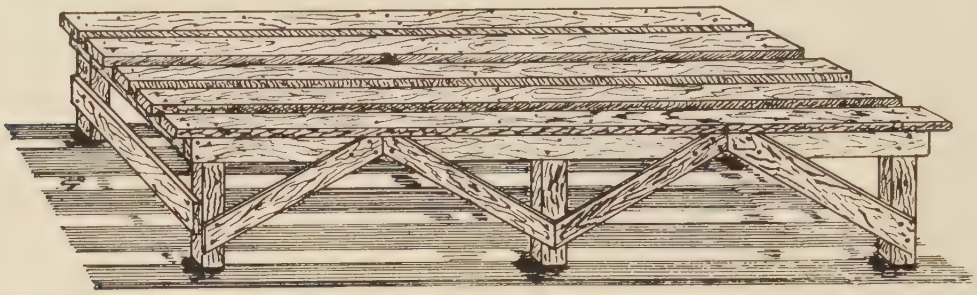

PLATE NO. 349

STAND FOR GARBAGE CANS SO CONSTRUCTED THAT IT CAN BE EASILY CLEANED

If flies are prevalent this stand should be within a screened inclosure.

them. The shelves are supported by iron bars, which together with the grate serve to hold the walls of the incinerator in position. Just above the attached end of each shelf is a stoke hole.

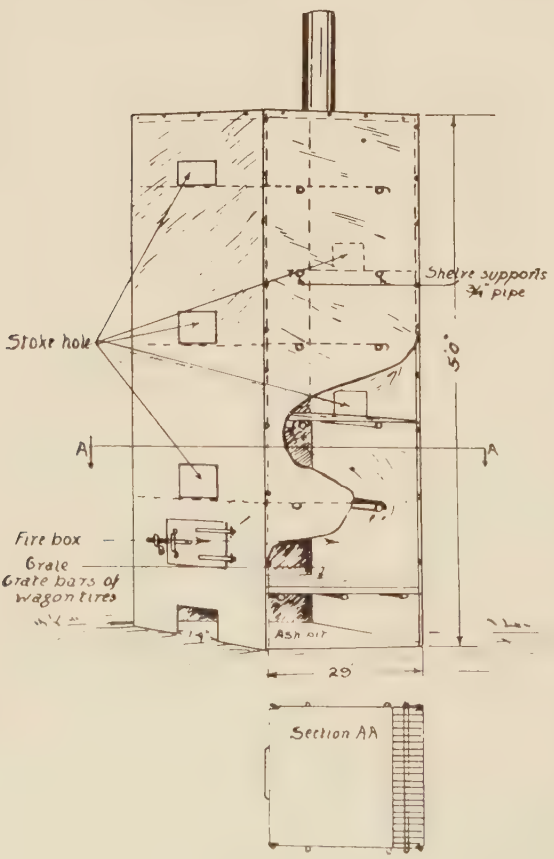

PLATE NO. 350

MULTIPLE SHELF GARBAGE INCINERATOR

To start a Williamson Incinerator the garbage is emptied through the top of the apparatus onto the upper shelf and pushed down onto the lower shelves by means of a bar or stick inserted through the stoke holes above each shelf. When loaded, about one and one-half or two inches of garbage should be on each shelf. A fire is then started on the grate, and the heat passes up under and around the ends of shelves drying out the garbage. Eventually the garbage on the lower shelf begins to burn and should then be pushed off into the fire on the grate. The garbage on the upper shelves is then moved down one shelf and more garbage emptied through the top onto the upper shelf. This process is repeated as long

as garbage is at hand to be burned, the garbage itself constituting the greater part of the fuel required for the operation of the incinerator.

The fire should be no hotter than necessary, in order to avoid buckling of the shelves. Only dry garbage is to be pushed down into the fire, as wet material will extinguish it. After it has been started, a small quantity of wood every hour or so will suffice to keep the fire going. A smaller and cheaper multiple shelf incinerator can be made from an empty steel oil drum (Plate 351). If properly operated it will care for the garbage produced by one hundred persons.

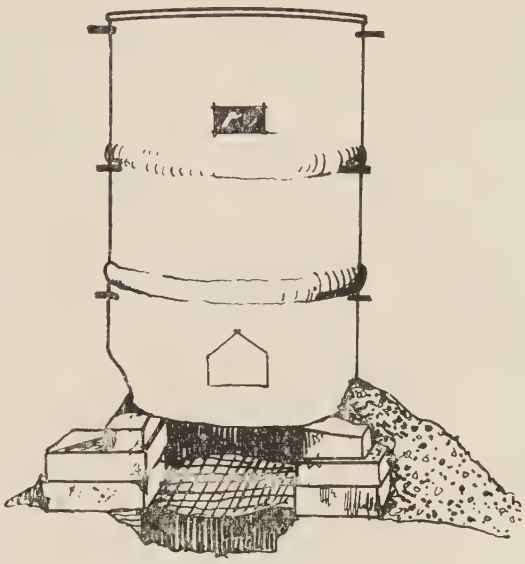

PLATE NO. 351
MULTIPLE SHELF INCINERATOR, BARREL TYPE
(War Department Document No. 897.)

"The incinerator illustrated by Plate 352 is strong and durable and will burn about one thousand pounds of garbage per twelve hours, or the garbage collected in ten cans one and one-half by two feet deep. On the basis of one pound of garbage and refuse per person per day in a camp, an incinerator burning one thousand pounds per day would easily take care of the garbage from about six hundred and fifty campers. For larger numbers, either more units could be installed or one unit operated up to its capacity for twenty-four hours." — *United States Public Health Service.*

Burial of garbage. Garbage may be disposed of by burying in a pit at some point well removed from the areas where it was produced. No other wastes should be buried with the garbage. From time to time the contents of the pit should be sprinkled with calcium hypochlorite. When garbage accumulates to within eighteen inches of the top, the pit is filled with well-tamped earth.

Disposal of rubbish. The rubbish that accumulates in park and reservation areas usually consists of paper, sticks, fruit skins and small debris of many kinds. Receptacles for rubbish should be placed about all areas used intensively. The closed type made of metal or wood and with a swinging lid are far more satisfactory than those made of wire. The latter soon become battered and when partly filled with papers, fruit skins, etc., are very unsightly. If a garbage incinerator is available, the rubbish which can be burned may be destroyed along with the garbage. Otherwise a small

inclosed incinerator can be built for this purpose. If burned in an open fire, the papers tend to blow about the grounds. Under suitable conditions rubbish and garbage can be satisfactorily disposed of by dumping in selected locations. An isolated ravine or hillside may be used for a dumping ground and the material allowed to rot. If feasible, the garbage and rubbish on the dump should be covered with earth.

Disposal of manure. While the horse and mule are rapidly being driven out of service in park systems, there are still some systems that make use of the older method of motive power. Horses may be kept at camps in outlying reservations also. Wherever horses or other live stock are kept in park areas the manure must be disposed of in a manner which will prevent fly breeding. The manure may be used for fertilizer about the park areas, or given or sold to nearby farmers. Small quantities of manure may be burned in a garbage or feces incinerator, or placed in windrows and burned. Crude oil may be used to assist in burning the manure. In warm, dry weather manure may be spread in a thin layer on the bare earth where it will be quickly dried by the sun. Flies will not breed in dry manure. Manure when well mixed with straw may be composted by dumping in a pile about three feet high and five feet wide at the base. The manure is firmly packed and covered with six inches of tamped earth. The edges of the pile and the ground around the edges to the width of one foot should be sprayed by a solution of borax (4 ounces to one gallon), using about a quart for every square foot. If borax is not available the ground upon which the manure is to be piled, and the margin of one foot beyond the edges of the pile, should be soaked with crude oil. The composted manure ferments and produces enough heat to kill all the fly larvæ, while the covering of earth prevents the deposit of eggs by flies. The borax or the oil will kill the few larvæ that escape from the edges of the stack.

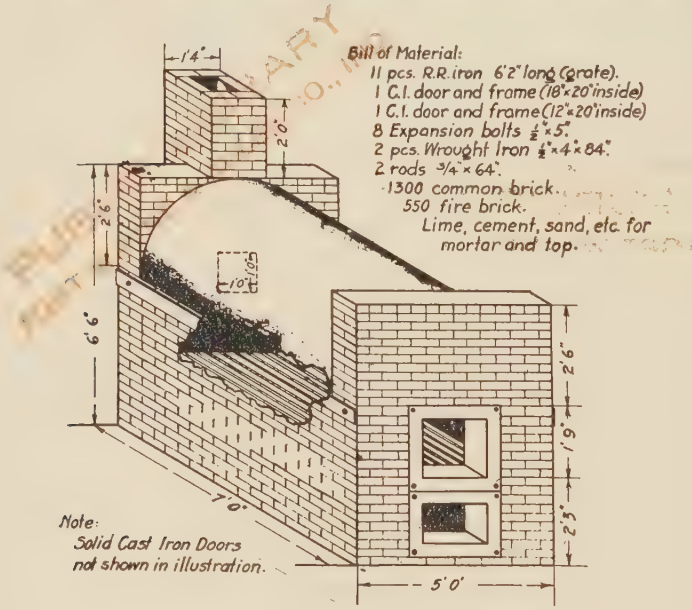

PLATE NO. 352
VIEW OF INCINERATOR FOR RESORT USE
(California State Board of Health. Used by courtesy of United States Public Health Service.)

Protection of Refreshments and Food Served in Park Refreshment Stands, Restaurants and Camps

Refreshments not served in unbroken packages or containers, and food served in restaurants or refreshment stands may become a principal means of transmission of disease, and every effort should be made to handle such refreshments and food in a manner that will, as nearly as possible, obviate contamination. Filth provides the breeding place for, and is the natural habitat of, the common house fly. It is an established fact that the bodies and feet of flies which have been in contact with human excreta frequently are coated with material containing disease-producing germs. When these

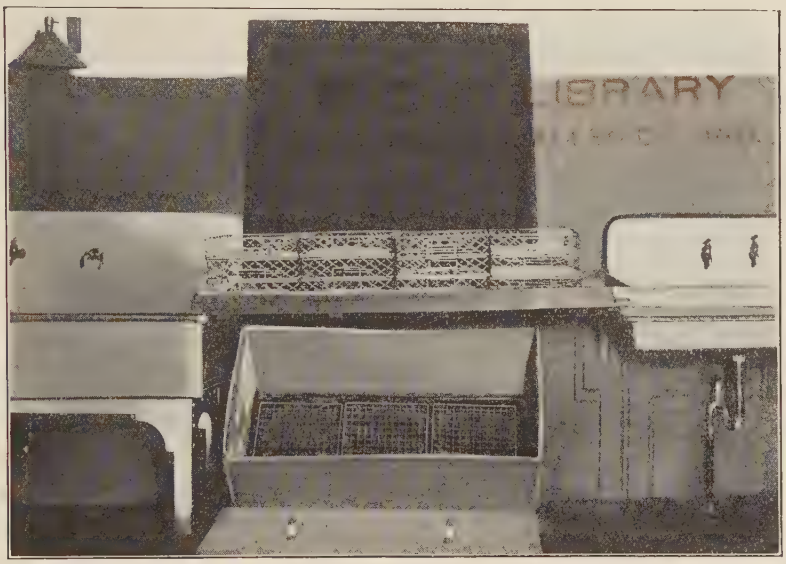

Plate No. 353
WIRE BASKETS FOR IMMERSING DISHES IN BOILING WATER

insects walk or feed upon the food of man the germs are transferred to the food and may cause disease. All refreshments served in refreshment stands with which flies may come into direct contact should either be kept in covered containers or covered with a fly-proof covering. All windows and doors of dining rooms and kitchens should be tightly screened. Despite the use of screens a few flies will gain entrance, and these can be eradicated by the use of traps, fly swatters and fly paper.

Dishes and eating utensils are easily contaminated and the germs of respiratory disease can be transmitted by apparently clean but unsterilized dishes. In so far as it is possible the use of paper cups, saucers, plates, spoons, etc., should be made obligatory at refreshment stands. In restaurants and in camps all tableware when used in common should be sterilized

after each meal. Sterilization is accomplished by thorough washing followed by boiling for at least ten minutes and air drying. Dishes can be conveniently boiled by placing them in baskets similar to those shown in Plate 353 and immersing in boiling water in a suitable covered container. After boiling for ten to fifteen minutes the baskets are removed from the water by means of hooks or cords and the dishes allowed to drain and dry without further handling (Plate 354). If baskets are not available, as may happen in camps, dishes can be boiled in any large container, drained and dried without wiping. Dishcloths should never be employed in drying dishes when their use can be avoided.

Ice boxes used for the storage of food should be thoroughly cleaned

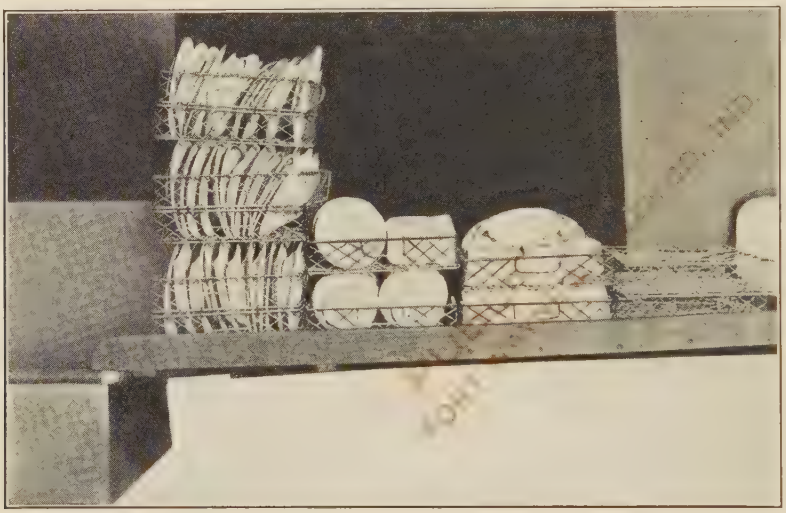

PLATE NO. 354
WIRE BASKETS FILLED WITH DISHES
After boiling the dishes are allowed to remain in the baskets until dry.

at least twice each week. Vegetable bins, fruit boxes, flour bins, bread boxes or cabinets, and meat safes should be fly and rodent proof and kept clean at all times. All tables, sinks and meat-cutting blocks should be kept scrupulously clean. Where uncovered dining tables are used the cracks between the boards soon become filled with food particles which are difficult to remove without taking the table apart. Provision should be made for this contingency by so constructing the tables that alternate boards can be easily removed. The meat-cutting block should be of the knockdown type that can be taken apart and cleaned.

All persons who are to handle refreshments or food in park refreshment stands or restaurants or in camps should be examined for evidence of contagious or infectious disease, particularly respiratory and intestinal

disease, before being allowed to begin work. Specimens of the feces and urine should be sent to the nearest board of health laboratory to be bacteriologically examined for the presence of the germs of typhoid fever or dysentery. Occasionally otherwise healthy people discharge the germs of typhoid fever in their feces and urine, and such individuals are known as typhoid carriers. One food handler who is a typhoid carrier can create havoc among a group of persons susceptible to typhoid.

A high standard of personal cleanliness should be demanded of all persons who work in refreshment stands, kitchens or dining rooms of restaurants, inns and camps. White, clean clothing should be worn by all food handlers. The finger nails should be trimmed short and kept clean. The hands must be thoroughly washed with hot water and soap after visiting the toilet.

Food materials should be protected from dust, dirty hands and flies while in transit from the point of purchase to the refreshments stands, restaurants and camps. Unbroken packages should be utilized wherever practicable. Meat purchased in quarters or fairly large quantities should be wrapped in cloth or heavy paper. Bread should be delivered in covered baskets or clean sacks. Only government inspected meat should be used, or if killed locally it must be known that the animals were healthy and that the meat has been handled subsequently in a sanitary manner. Vegetables or fruits are not infrequently subjected to unsanitary conditions and consequent contamination prior to delivery to the consumer, and any which are to be eaten raw must be thoroughly washed in clean water before serving.

Where milk is served it should be obtained only from dairies which produce and deliver it in accordance with recognized sanitary precautions. If, in the case of camps or inns located in reservations, the dairy or dairies from which the milk is gotten is not under the control of and regularly inspected by a local health department, samples of the milk as delivered should be sent at bi-weekly intervals to the nearest board of health laboratory for chemical and bacteriological analysis. If possible only dairies with herds certified to be free from tuberculosis should be patronized. Milk obtained from questionable sources should be pasteurized by heating it to a temperature of 65 degrees Centigrade (149 degrees Fahrenheit) for thirty minutes, followed by rapid cooling.

Example of Conditions and Specifications Governing Rental of Refreshment Stands in One Park System

The following are the conditions and specifications governing the rental of refreshment stand privileges in the parks under the control of the Board

of Park Commissioners of Milwaukee. These conditions and specifications are presented here chiefly because of the sanitary regulations involved.

1. The form of lease shall be the same as is hereto attached.

2. *Time of Payments.* Payments to be made as follows:

If lease terminates March 1, 1924, one-half at time of signing and the balance on or before July 15, 1923; if lease terminates March 1, 1925, one-quarter at time of signing, one-quarter on or before July 15, 1923, one-quarter on or before March 1, 1924 and one-quarter on or before July 15, 1924; if lease terminates March 1, 1926, one-sixth at time of signing, one-sixth on or before July 15, 1923, one-sixth on or before March 1, 1924, one-sixth on or before July 15, 1924, one-sixth on or before March 1, 1925, and one-sixth on or before July 15, 1925.

3. No alcoholic, spirituous, vinous, malt or semi-alcoholic liquors shall be sold in the parks, and no watermelons, unshelled peanuts or bananas shall be sold therein. Cigars and tobacco may be sold subject, however, to such regulations as the Board of Park Commissioners may adopt. All food, drinks or other refreshments offered for sale must be of good quality, wholesome, clean and pure, and must conform to the provisions of the pure food laws of Wisconsin and the United States Government.

4. There shall be kept on sale by the lessee at all proper times a sufficient quantity to supply all demands of such food, refreshments, candies, etc., and other articles, as may be desired by the public, and no food, refreshments, candies, and other articles of whatever nature, shall be sold without the consent and approval of the Board of Park Commissioners.

The Board of Park Commissioners shall have the right to fix the maximum price for all food, refreshments, candies, etc., and any other article offered for sale and shall have and hereby reserves the right to at its discretion, revise the maximum price at any time, and any such revision as may be ordered must be complied with by the lessee.

The Board of Park Commissioners shall also have the right to make a revision of the kinds of foods, refreshments, candies, etc., and any other article offered for sale, by either eliminating certain articles already offered or adding such others as it may deem advisable, and such revision must be complied with by the lessee; provided the lessee shall not be compelled to add any articles if he can show and satisfy the Board of Park Commissioners that the handling of such article is not in great demand and would cause a financial loss.

5. In all of the parks, excepting in such buildings or areas which are excluded, in addition to operating the refreshment stand privileges, the lessees shall also have the right to operate a wardrobe for checking wearing apparel and other articles, and the price for such checking, from time to time, shall be fixed by the Board of Park Commissioners.

6. In whatever park ordered by the Board of Park Commissioners, a neat and attractive bill of fare shall be provided by the lessee. In all other parks the bill of fare shall be conspicuously displayed on a neat and attractive sign in some part of the building in which these refreshments are sold.

7. The Board reserves the right on its own initiative to inspect or cause to be inspected all food, drinks or other refreshments offered for sale, as well as all containers of such food, drinks or other refreshments, as also the ice boxes and other furniture and fixtures, dishes and utensils used, as also the methods employed in serving, and any orders issued by the Board of Park Commissioners after such inspection must be complied with by the lessee and no appeal can be taken therefrom.

8. The Board also reserves the right, upon complaint by any person, that the food, drinks or other refreshments offered for sale are not wholesome and of good quality, or that the prices charged are in excess of the price given in the bill of fare, or otherwise fixed by the Board of Park Commissioners, or that the articles mentioned on the bill of fare are frequently not obtainable, or that the service is not adequate, courteous, prompt or efficient, to investigate such complaints and if substantiated, to issue such orders as it may deem necessary to remedy the matter complained of, and such orders must be complied with by the lessee and no appeal can be taken therefrom.

9. All buildings under the charge of the lessee shall be thoroughly and frequently cleaned by the lessee by dusting, washing, or scrubbing so that no dust or dirt shall ever be anywhere noticeable, failing to do which, the Board of Park Commissioners shall have the right to cause said buildings to be cleaned and charge the cost thereof to the lessee.

10. No refuse or other matter from the buildings shall be thrown or deposited on any portion of the park grounds, and no solid substance shall be emptied into any sewer or sink. All empty bottles, ashes, and refuse matter of whatever kind, shall be put into suitable boxes provided for that purpose. The lessee shall not permit bottled beverages to be taken away from his stand or stands unless he can assure the return of all empty bottles to his stand.

11. No change shall be made in the construction of any building or buildings occupied by the lessee, nor shall any stand or counter be erected in any part of the park, without the written consent of the Board of Park Commissioners.

12. The lessee shall be required to take reasonable care to protect the premises assigned to him.

13. The waiters shall give prompt service, shall be

courteous and obliging to all, and shall wear a distinctive badge.

14. The lessee shall be at all times amenable to the general rules and regulations now in force or hereafter made by the Board of Park Commissioners and the said Board of Park Commissioners may at any time at its discretion, cancel this lease upon one week's notice to be given in writing by the secretary of the Board, acting by authority of the said Board of Park Commissioners; provided that if such lease is cancelled, pro rata refund of consideration already paid by lessee shall be made.

15. The lessee shall not assign his lease or any interest therein, or sublet any portion of the premises included in said lease, without first obtaining the written consent of the Board of Park Commissioners.

16. The lessee shall, at his own expense, and subject to the approval of the Board of Park Commissioners, provide all necessary furniture, fixtures, show cases, dishes, etc., necessary and required for the conducting of his business; and the same shall be and remain the property of the lessee.

17. Light and heat will be furnished by the Board of Park Commissioners in such building or buildings where lighting and heating facilities are installed and operated for public use; in such building or buildings where there are no heating and lighting facilities the lessee must install and operate same at his own expense.

Fuel for cooking must be furnished by the lessee at his own expense.

18. The leases grant the exclusive privilege of selling refreshments in the respective parks for which they are issued, excepting, however, such specific reservations and conditions that may be made by the Board when such leases are granted, and the use of such quarters as may be erected and assigned by the Board of Park Commissioners for that purpose. In Gordon Park the bath house is included in the privilege; in South Shore Park the bath house is excluded; in Washington Park the field building, and the entire area in and around the race track and the stand and the entire area in the zoo are excluded. The refreshment stand and the wardrobe checking in the field building, as also the refreshment stands in the race track and zoo area, will be operated by the Board of Park Commissioners.

19. The lessee must confine the sale of goods to the quarters assigned and will not be permitted to peddle goods or solicit business in the park.

20. The Board of Park Commissioners reserves the right to lease the concessions only to such persons who, in its judgment, shall have the necessary qualifications to conduct the concessions in a proper and satisfactory manner, and who, in its judgment, are reliable and possess a good character; and the Board in leasing such concessions reserves the right to lease the respective privileges to such parties who, in its opinion, are best fitted for conducting the same whether or not such parties are the highest bidders.

For and in consideration of the sum of.....
.....dollars ($.....) payable.....
.....
.....
the Board of Park Commissioners of the City of Milwaukee does hereby grant unto.....
.....
the sole privilege and permission to sell refreshments in
..... Park, excluding.....
.....
from.....
to.....
the sale of such refreshments to be confined, however, to such quarters in said park and such parts in any building or buildings in said park which the Board of Park Commissioners may, from time to time, designate for such purpose; this lease shall be subject to the terms and conditions set forth in the specifications regulating the operating of refreshment stands in the parks, copy of which specifications is hereto attached and made a part of this lease, with the same force and effect as if the same were incorporated herein.

It is hereby made a part of this agreement that the said.....
.....
shall at all times be subject and amenable to the rules and regulations of the Board of Park Commissioners now in force or hereafter adopted and that said Board of Park Commissioners may at any time at its discretion cancel this lease upon one week's notice to lessee to be given in writing by mail, by the Secretary of the Board of Park Commissioners, acting by authority of said Board of Park Commissioners; provided that if such lease is cancelled pro rata refund of consideration already paid hereunder by lessee shall be made.

In Witness Whereof the said Board of Park Commissioners has caused these presents to be signed by its president and secretary and the said lessee has hereunto set his hand and seal this

.....day of
..... 19.....
.....
President
.....
Secretary

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Sanitation of Sleeping Quarters in Camps

Regardless of whether tents or buildings are used for sleeping quarters, sufficient air space and adequate ventilation should be provided. The relationship between the ventilation of sleeping quarters and the air space and floor space provided for each occupant is such that one cannot be considered to the exclusion of the other two.

The human body is constantly giving off moisture which in a confined space and in the absence of sufficient ventilation serves to increase the relative humidity of the air and thereby produces conditions which are injurious to health. Ventilation produces an exchange between the inside and outside air which tends to reduce the relative humidity of the former towards that of the latter. Many different types of ventilators and methods of ventilation have been devised, such as ridgepole ventilators and air shafts of various kinds, all being designed to produce inward and outward currents of air. Good ventilation can be produced in buildings by the intelligent use of doors and windows, and in tents by means of windows in the sides, flaps at the end, and possibly ridgepole or center pole ventilators. Whatever method is used it must be remembered that the object of ventilation is to maintain the same relative humidity of the inside air as obtains in the outside atmosphere. Each individual must be furnished sufficient air space so that the available ventilation will serve to prevent an undue rise in the relative humidity of the air. The smaller the air space the better the ventilation must be if the relative humidity is to be maintained at the proper level. In the presence of poor ventilation, sluggish air movement, or high relative humidity of the outside air, a larger air space will be required for each individual than when the opposite conditions prevail. A great many observations have shown that each occupant of a building or tent under the average conditions should have not less than five hundred cubic feet of air space. Where ceilings are more than ten feet high the space above the ten-foot level is not included in calculating the air space. With a ceiling ten feet or more in height fifty square feet of floor space would be required for each individual, and with the ceilings lower than ten feet the amount of floor space should be increased accordingly.

While it is very desirable that sleeping quarters be so arranged that each occupant will have fifty square feet of floor space, nevertheless it is at times impracticable to meet this requirement. The ordinary cot requires about fifteen square feet of floor space so that, considering only the space required for the beds and the movements of the occupant in going to and from his bed, the floor space per person will range from twenty square feet upward. Good ventilation should be provided under any circumstances, but when the floor space per person is reduced to below forty square feet

it is essential that the movements of the air throughout the room or tent are such that the inside air is practically the same as that on the outside. If extraordinary care is devoted to the ventilation it is possible to maintain healthful conditions in crowded sleeping quarters even where only twenty to twenty-five square feet is allotted to each occupant.

The use of double deck bunks should be avoided, if possible, and wherever used, the tiers (standees) should be placed away from the walls of the building or tent in order that there may be free circulation of air on all sides. Where beds are placed side by side the head and foot arrangement should be practiced whenever there is less than one hundred square feet of floor space per person. That is, the head of each bed is opposite the foot of the bed on either side. The greater the distance separating the heads of the sleepers the less danger there is of direct transmission of massive doses of air-borne germs of respiratory diseases. Weather permitting, the walls of tents should be rolled every day so that the interior is thoroughly aired or sunned. If buildings are used as sleeping quarters, the bedding should be taken out of doors and sunned twice each week.

Insect Control

There are several kinds of insects that cause a great deal of annoyance to people using parks and reservations, especially at certain seasons of the year. Among these are mosquitoes, common house flies, "chiggers," ticks and vermin of various kinds. Of these the mosquito and the fly cause the most annoyance and discomfort and are also a direct menace to health. Because so many park properties are in the vicinity of lakes, ocean, rivers, small streams and because bodies of still water are commonly made a part of the landscape feature of large parks, and often small ones as well, mosquito control becomes a problem of great importance at certain times of the year. In the vicinity of camps and picnic grounds, refreshment stands and restaurants, flies are also likely to be very numerous during the warm parts of the year in the northern and middle sections of the country and in the extreme south the year around. Chiggers and wood ticks are found throughout the entire country. Vermin such as lice, bedbugs and roaches are most likely to be found in camps and resort hotels in parks.

Mosquitoes.[1]

Water is necessary to the development of all varieties of mosquitoes. The female mosquito lays her eggs, approximately two hundred at one time, on the surface of the water. These eggs hatch into larvæ or wiggletails in

[1] This section on Mosquito Control is taken almost verbatim from "Applied Municipal Sanitation," by V. M. Ehlers, Chief Sanitary Engineer; E. G. Eggert, Sanitary Engineer; and Ella G. White, Secretary; all of Division of Sanitary Engineers, State Health Department of Texas, published by the Texas Association of Sanitarians, Austin, Texas, 1925, Chapter III, pages 107–119.

about two days. The wiggletails move vigorously about in the water feeding, and gradually increase in size from six to ten days, depending upon the species of the mosquitoes and the temperature of the water. The warmer the weather and the higher the temperature of the water, the more rapid is the development. During all this time the wiggletail is an air-breather. It frequently comes to the surface of the water to breathe, accomplishing this by holding its breathing tubes, which are at one end of the body, to the surface of the water.

When the larva has attained its full growth it changes into what is called the pupa. The pupa is also an air-breather, breaking through two small tubes, which project like horns from the top of its head. During the pupal stage no food is taken and it spends its time floating quietly at the surface of the water. At the end of one or two days the skin of the pupa splits and the full-grown mosquito comes forth. The new mosquito floats on the surface of the water for a short time until its wings harden and then flies off on its bloodsucking career. About a week is required for the cycle of egg to adult. In another week the female mosquito is ready to start laying eggs, and she will lay two hundred each week after that.

Only the female mosquito preys upon man. The male is seldom found far from the breeding places. His food consists of plant and vegetable juices, for his boring apparatus is not strong enough to penetrate the human or animal skin. It is only in default of a source of blood supply that the female will live on the thin nourishment that sustains the male. Male and female mosquitoes can easily be distinguished by examining the head. If the antennæ and palpi which project from it are very feathery, the mosquito is a male; if they are rather bare, it is a female.

Mosquitoes must have water in which to spend the wiggletail state of their lives. They do not breed in weeds, grass, trees or vines. They will go into such places for shelter from the sun, wind or rain, but they cannot multiply there. There are many varieties of mosquitoes, but the two that most concern the sanitarian are that species of the Aedes formerly known as the Stegomyia, which is the carrier of yellow fever and dengue fever, and the Anopheles, which is the carrier of malarial fever. The former is domestic and is found chiefly around buildings and breeds only in clear water in artificial containers, such as rain barrels, watering troughs, tubs, wells, etc. The latter is semi-domestic. They breed in natural pools of clear water, particularly those with grassy edges which form a harbor. The Anopheles travels a little farther than the Aedes but very rarely gets more than a half mile from its breeding place.

In the control of the mosquito menace there are two main lines of attack, namely, eliminating or controlling the breeding places, and screen-

ing out the mosquito. There are several major activities that have to be considered in the elimination of breeding places. Except in the interior of very large park areas, it is obvious that park officials alone cannot be held responsible for the control of the mosquito pest. It is in reality a community affair. A park official might take every step known to be effective and still have swarms of mosquitoes in his parks because of the presence of breeding places just outside of the park boundaries. However, as a part of a community campaign against this pest, it is the duty of park and recreation officials to take every necessary step for control on properties under their jurisdiction.

Drainage. Wherever possible, water should be eliminated by drainage. This applies to swamps, seepage areas, ponds, ditches, etc. It should be remembered that a good drainage ditch will be as straight as possible, have clean-cut sloping sides and narrow bottom, and should be frequently cleaned and cleared of vegetation. Roadway drainage curbs or ditches are a frequent source of trouble and should be cleaned and graded often. Culverts are often silted up at the lower end and provide a shaded pool of water for mosquito production.

Stream improvement. Mosquitoes have no objection to breeding in running streams, provided they can get some protection from the current and from fish. Where the stream is overgrown with vegetation or choked with brush, this protection is afforded. It is therefore necessary to keep streams in park areas running freely by frequent cleaning. At times it may be found advantageous to straighten the course of a stream, and where the stream spreads out, construct a channel with boards or stone, and fill behind, eliminating the dangerous grassy edges. However, this method of dealing with streams will often interfere with certain desired landscape effects. Holes that are likely to hold water during dry weather should be filled or drained.

Artificial containers. A very large percentage of mosquitoes which infest tourist camps, organized camps, picnic grounds, restaurants and other buildings in parks, are raised in artificial water containers which are usually present about the premises. Old wells and cisterns not in use should be filled. Eaves-troughs and rain spouts, if out of repair and choked up, may also furnish suitable breeding places and should be inspected frequently. Septic tank effluents or any accumulation of sewage are favorite breeding places for the variety of mosquito known as the Culex. The tank should be kept well covered to prevent entrance of the female mosquito seeking a nesting place, and the effluent channel must be kept clean and unobstructed and of such grade as to have a good current. If rain barrels are necessary, they should be kept covered with sacking held in place by a hoop. Arti-

ficially constructed storage reservoirs such as metal, wooden or concrete tanks should be covered with a sixteen-mesh or eighteen-mesh screen. All old cans, buckets or other utensils that may hold water should be buried or burned. Since there will always be water that it is impossible to drain, and since water areas are desirable for many purposes in park development, methods of preventing mosquito breeding in such places must be applied. These consist of killing the mosquito in the wiggletail stage by employing minnows, oiling the surface of the water, or by the use of larvicides.

Stocking with minnows. For economy and efficiency in mosquito control the possibilities of the minnow cannot be overlooked. One of the varieties of minnows that feeds upon wiggletails is the pot-bellied top minnow, scientifically known as *Gambusia Affinis*. They multiply very rapidly, giving birth to their young alive in successive broods during warm weather. Their value in mosquito control lies in the fact that they feed voraciously on mosquito wiggletails. The minnows are top feeders and are, therefore, especially efficient in destroying the Anopheles mosquito. However, mosquitoes of any species have little chance to develop to maturity where this fish is abundant. Vegetation, debris, or other accumulation likely to harbor mosquito larvæ along edges of the pool should be cleared so that the fish will find and devour the wiggletails. It is also desirable that the edges of ponds be shallow enough to give the minnows protection against bass and other predacious fish.

Their usefulness is not confined to streams, ponds and tanks. Two or three fish introduced into a shallow well, underground cistern, watering trough, or rain barrel will live indefinitely, do no harm to the water, and keep it free from mosquito larvæ. They will not live in metal overground cisterns. Other fish have also been used in mosquito control, namely, head minnow, small catfish and red horse. The latter two are valuable only in water barrels, wells and cisterns.

Oiling. Oiling is particularly adapted to the control of small temporary pools that cannot be stocked with minnows. The larva is unable to break through the oil film and obtain air when it comes to the surface to breathe. In addition the oil enters the breathing tubes and seems to have a poisonous effect. It is necessary, of course, that a continuous film of oil be kept on the surface of the water, and the frequency of application will vary with the conditions of the weather, the current and so forth. The most economical and effective method of application of oil is by the use of a spray knapsack can, holding about five gallons and carried strapped on the back. A pump is operated with one hand and the nozzle is directed with the other, allowing a thin film of oil to be sprayed to a distance of ten feet. To control running streams drip cans are also used. These con-

sist of a box or can with a spigot or opening so arranged that the oil will run out continuously, drop by drop. They need frequent attention, and the stream must be kept free from obstructions to allow an uninterrupted spread of oil. Continuous application of oil can also be obtained by soaking a sack of sawdust in oil and anchoring it below the surface of the water. Kerosene, fuel oil and crude oil have been used for mosquito control. Kerosene is open to the objection that it is expensive, evaporates quickly and lacks color to indicate whether the film is complete. Crude oil, mixed with kerosene, combines the advantage of high toxic power, good spreading ability, gives a lasting film and is easy to spray. Some fuel oils have all these qualities without the addition of kerosene. Waste crank-case oil obtained gratis from garages has been used extensively.

In California, Mr. H. J. Quayle has used a combination of heavy oil of eighteen degrees gravity, and a light of thirty-four degrees gravity, in the proportion of four to one, respectively. This mixture made an oil just thin enough to spray well from an ordinary spray nozzle and yet thick enough to withstand rapid evaporation. It was applied by a barrel pump where this could be used and by an ordinary knapsack pump in other regions. A single application was found to be effective sometimes up to four weeks. The army of occupation in Cuba used oil every two weeks, and this is found to be about the general practice.

Larvicides. Paris green mixed with ordinary roadside dust and sprinkled on the surface of the water has been found effective in destroying the Anopheles larvæ. Two level teaspoonfuls of Paris green mixed with a quart of road dust will be sufficient to treat one thousand square feet of water. Handfuls of the mixture are thrown over the water, preferably with the wind at the distributor's back, and an even distribution will result. Anopheles control by weekly application of Paris green is one of the most economical methods that has been discovered, but it must be borne in mind that it is effective against Anopheles larvæ only. Other species are not harmed, nor are Anopheles pupæ.

Creosote and various compounds of creosote can be sprayed on water with good effect. It is of particular value where there is enough current to prevent an effective film of oil. Observation will be necessary to make sure that a sufficient amount of the larvicide is being applied.

Niter cake, a waste product of fertilizer factories, may also be used, particularly in barrels for fire protection. Two pounds of the dry cake to the barrel will prevent breeding for the season. Where it can be obtained in large quantities without cost, it has been dumped into the catch basins of storm sewers with the effect of preventing breeding throughout the storm sewer system. It must be used with care, however, as it varies in strength,

and water that is alkaline will deprive it of a great part of its toxic power.

Destruction of harboring places. Destroying high grass, weeds and shrubbery close to picnic grounds, camps and other places where people congregate in parks, especially wild parks, will sometimes reduce the nuisance of mosquitoes, since they use these places for protection against the sun, rain and wind. Unscreened buildings are especially desirable places for harboring mosquitoes, as they spend their daylight hours in dark corners, on ceilings or under floors, and come forth in search of blood at dusk. Such places may be sprayed with a mixture of creosote, using about two gallons to a room.

Screening. The malaria mosquito bites only at night; therefore, if everyone in a camp slept in a cabin or tent so well screened that no mosquito could enter there would be little danger of getting malaria. No place is well protected that has twelve-mesh screens, as some mosquitoes are sure to get through. Only sixteen-mesh should be used if complete protection is expected. Screens should be kept in repair, frames should fit well, and cracks under doors and windows closed by some effective method. To prevent the entrance of mosquitoes through chimneys the top should be screened or the fireplace openings sealed.

Flies.

Flies are likely to become a special source of annoyance and a menace to health at picnic grounds, refreshment stands, restaurants and in all kinds of camps, although they may be troublesome in other places in parks, especially if in the vicinity of places where food is being served or where breeding places are found.

"There are in general four species of flies that infest human habitations. These are: (1) The blue-bottle fly or 'blowfly'; (2) the green-bottle fly; (3) the common house fly; and (4) a fly similar in appearance to the house fly, but smaller. Flies like mosquitoes pass through different stages of development from the egg to maturity. The female lays her eggs in warm, moist manure or in garbage piles, or in privy contents, where they hatch into small maggots in eight to forty-eight hours. During the next four or five days the maggots eat voraciously and develop a growth of about half an inch. At the end of this period they emerge as full-grown flies."[1]

Measures for the eradication or control of flies consist of the elimination of breeding places, destruction of the adult fly and preventing the access of the fly to the habitations or to the food of man. The house fly breeds habitually in feces, preferably horse manure. Flies can, therefore,

[1] "Camp Sanitation," W. F. Draper and H. B. Hommon, Surgeon General's Office, United States Public Health Service, Washington, D. C.

be greatly reduced in numbers by the disposal of excreta in such a manner as either to prevent the female fly from reaching it or so as to destroy the eggs or the larvæ. The methods of disposing of human excreta and manure have been described under disposal of waste.

Three methods of destroying the adult fly are in common use: by traps, by fly paper or by poison. Of these methods, trapping has been found to be the most effective for camp use, although usually more than one measure is employed.

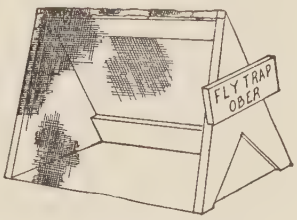

PLATE No. 355
THE OBER FLYTRAP

With one small triangle fastened with wooden buttons. (War Department: Document No. 897.)

Flytraps are of various forms and sizes. The Ober flytrap, as shown in Plates 355 and 356, is a very good model, as in addition to being a very effective trap, it has the advantage that it is inexpensive and can be very quickly and easily constructed. Two triangles are made from a twelve-inch board, and a small triangle is cut from the base of each of the larger triangles. The larger triangles are connected by three light sticks of any desired length, usually about eighteen inches. The screening is tacked to the small triangle at the junction of one of the sides and the base. It is then fastened over the apex of the small triangle and down the other side to the corner of base and side, whence it is carried around the large triangle back to the starting point. Both ends of the trap are constructed in this manner and one of the small triangles is then nailed back into place, the other being fastened to the larger triangle with wooden buttons to facilitate the removal of the flies. In some models both small triangles are nailed fast and a small door is made in one of the larger triangles through which the flies can be removed from the trap. Small holes, each the size of a pencil, and about one inch apart, are punched through the fold of the screening which extends from the apex of one small triangle to the apex of the other.

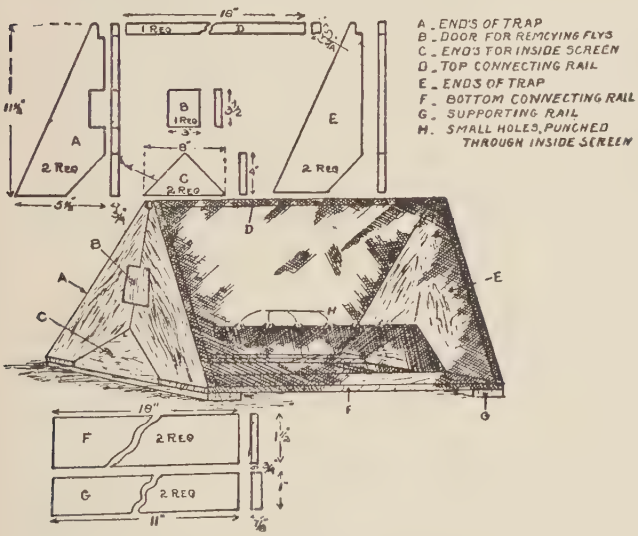

PLATE No. 356
DETAILS OF THE OBER FLYTRAP

A door is shown at B through which the flies can be removed after the trap has been immersed in water or flamed.

The trap is set on a level surface either on the ground or floor or on a stand two or three feet in height. The bait is placed in a flat, shallow container under the trap, and when the fly has finished feeding it will crawl up through the small holes in the screen into the main part of the trap. The trap can be emptied by first immersing in water or flaming, to kill the flies, and then loosening the wooden buttons and slightly depressing the small triangle, or opening the small door. The flies will slide out when the other end is raised.

The most effective fly baits consist of either putrefactive or fermentative substances. Putrefactive baits soon become so malodorous as to constitute a nuisance, but while fermentative baits have a distinct odor, it is not unpleasant. Of the latter the following have been found to be efficient: (*a*) Bran, 11 ounces; corn meal, 5 ounces; syrup, 4 ounces; water, 1 pint. (*b*) Over-ripe bananas and sour milk. (*c*) Corn meal, 1 part; molasses (syrup), 2 parts; water, 5 parts; yeast (bakers'), as needed to produce the necessary fermentation. Of the putrefactive baits, fish heads, fish scraps, or canned salmon are the best. Traps should be placed in kitchens, around garbage cans, toilets or wherever flies are numerous.

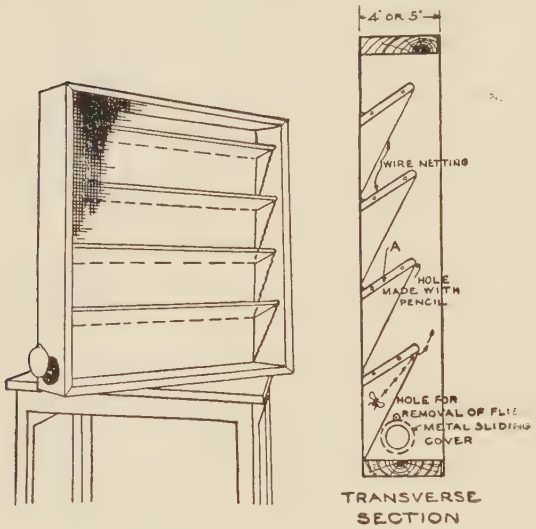

PLATE NO. 357
THE HODGE WINDOW SASH FLYTRAP

The Hodge window sash flytrap, as shown in Plate 357, is quite efficient and has the advantage that no bait is required. Flies are attracted by light and this tendency is utilized in the operation of the Hodge trap. A frame is made to fit the window opening and held in place by the sash coming down onto it or by fastening to the side of the window opening. The frame is four to five inches in depth, covered on the outside by screening, while on the inside the screening is arranged in small triangles or pyramids, one above the other, with the apices pointing upward and outward. At the apex of each triangle a small hole the size of a lead pencil is punched through the screening. The fly, in endeavoring to reach the light, enters the broad base of the triangle and crawls upward through the hole in the screen. The flies are killed by flaming and removed through an opening with a sliding metal door in the lower part of the trap. Certain modifica-

tions of the Hodge trap have no outside screen and the flies pass through the holes into the outer air. The Hodge trap is most efficient when all the other windows and the doors of the room are darkened.

Fly wire and fly paper. The sticky fly mixture or fly glue consists of ten parts of castor oil or linseed oil, eight parts of powdered resin, and one part of powdered acacia, by weight. The oil and the resin are brought to boil separately and then mixed and allowed to boil for fifteen minutes. The acacia is then slowly added, care being taken to prevent the mixture from boiling over. The proportion of the oil and resin should be varied according to the temperature and the consistency desired. When cool, this mixture is applied to wires with a brush. The glue adheres better to rusty than to smooth wire. Pieces of wire about eighteen inches long which have been treated in this manner are hung from the ceiling or other convenient places. Flies habitually tend to alight on hanging wire or strings, and wires coated with fly glue are, as a rule, more effective than fly paper. The flies are wiped off with a cloth and the wire recoated with the glue. Fly paper can be made by coating paper with the fly glue, but it will probably be much simpler to buy the ordinary fly paper. Fly paper is more efficient if placed in the form of an arch rather than flat.

Fly poison. A safe poison can be made as follows: Milk, ½ pint; 40 per cent formaldehyde, 2½ teaspoonfuls; sugar, 10 ounces; lime water, sufficient to make 1 pint. Or, sodium salicylate, 3 teaspoonfuls; brown sugar, 1 or 2 teaspoonfuls; water, 1 pint. The fly poison is placed in a shallow dish, or an ordinary drinking glass is partly filled with the solution and inverted over a saucer or other flat dish lined with white blotting paper. A small match stick is placed under the edge of glass and as the solution evaporates from the paper more flows out of the glass. Other fluids should be protected from flies so that they will be compelled to drink the poisoned solution.

Screening. The doors, windows and other openings through which flies can gain entrance into a building should be screened.

Bedbugs.

It has never been definitely proven that bedbugs transmit disease, but nevertheless every effort should be made to eradicate them as soon as a room in an inn or camp is discovered to be infected. As a rule the bedbug deposits its eggs in cracks and crevices of walls, floors and furniture. Wooden bedsteads should never be used in inns or camps, as these provide many places in which the bedbugs will thrive. As the eggs as well as the adult bug must be destroyed, the walls, floors, beds and crevices in the furniture should be thoroughly scrubbed with hot water and soap, followed by a liberal application of gasoline or kerosene, which will penetrate and kill the egg, and should be forced into every crack that can be found. Where possible the bedding should be washed in hot water or carefully ironed with a hot iron

in order to destroy the eggs. It may be necessary to devise some means of sterilizing the mattresses with steam or hot air. Fumigation with sulphur will kill the adult bedbug but will not affect the eggs.

Roaches.

Roaches frequently pass from toilets, sewers and drain pipes to refreshment stands, kitchens and dining rooms in restaurants and camps, and may therefore constitute a menace to health. The prevention of roaches can be accomplished by the elimination of cracks, crevices and dark corners in kitchens and dining rooms and by keeping all the supplies in roach-proof containers. Fumigation by sulphur will kill the roaches reached by the gas, but the best way to eradicate them is by the use of roach powder, consisting of sodium fluoride mixed with meal or flour. This powder is dusted in corners, closets, drawers and dark crevices.

Sanitary Care of Areas and Facilities of Various Kinds

Camp Grounds.

Cleanliness is so intimately related to sanitation that a clean camp will, as a general rule, be sanitary. Every camp director wishes to have his camp present an attractive and pleasing appearance, and this cannot be done unless the grounds are clean and sanitary. To this end all rubbish should be removed at once. Such places as the rear of kitchens and dining rooms should be carefully watched. As a rule "out of sight out of mind" applies only too often to dirt and rubbish. All low spots, walks, roads and paths should be drained by suitable and well-kept ditches or by underground tile. In tent camps every tent should have a trench on all sides to carry off storm water, and prevent the formation of mud holes. Rank vegetation and long grass should be kept down.

Picnic Grounds.

Picnic grounds, unless kept under very close supervision, will likely very soon become covered with papers, fruit skins, pieces of food and other debris carried in by the picnickers. Every picnic ground should have several commodious receptacles into which the remains of eating can be thrown. It would be well if one of these receptacles were water-tight, into which could be thrown stale coffee, dishwater and other liquids resulting from the picnic dinner or supper. Attractive signs, posted at conspicuous places about the grounds, giving instructions to picnickers where to deposit refuse, may help some in keeping the ground better policed. Some park executives who handle their picnic ground under a permit system require a deposit of from one dollar to five dollars from the group as a guarantee that the grounds will be left in as good condition as they were found. If the picnickers police the ground well the deposit is returned. If not, the deposit

is retained to pay for the labor necessary to put the grounds into good condition. Many park departments have general ordinances relating to all park areas but especially to picnic places respecting littering the grounds.

Children's Playground Areas.

The sanitary care of children's playground areas consists chiefly of careful daily policing of the grounds by caretakers, and taking such measures as will effectively keep down the dust. The flushing of hard-surfaced areas daily, the application of calcium chloride to other types of surfacing, or frequent sprinkling of the areas with water sufficiently to keep them moist are effective measures in keeping down dust. Every playground should be equipped with one or more receptacles for refuse and the children carefully instructed in the use of them. Children afflicted with skin diseases should be excluded from the playground or if not excluded should be prevented from using any play supplies or apparatus used by the other children. Instruction of the children as to the danger of expectorating on the playground is desirable. A basic sanitary measure for all playground areas is adequate drainage and proper surfacing.

Sanitary Care of Park Areas in General.

One of the most difficult of all tasks of the park executive is to keep the areas under his control free of the immense amount of litter brought in by those who use the areas. Nearly every park department has some kind of an ordinance relating to this matter of which the following are a few examples:

"It shall be unlawful for any person to deposit or leave, or permit to be deposited or left in any public park, any trash, paper, box, can, bottle, food fragments, or other unsightly substance, except in receptacles provided especially for that purpose, or to dump or throw any trash, stones, bottles, food fragments, or refuse of any kind in any lake, streams, swimming pools or fountains in any such public parks." (Ordinances of the City of Spartanburg, August 20, 1924, Section 4, page 104.)

"No person shall throw any dead animal or offensive matter or substance of any kind into the River Schuylkill or other waters within the boundaries of any park. No person shall scatter, drop or leave in any portion of the parks except in the receptacles provided for the purpose, any piece of paper, rags, garbage, dead flower or other rubbish." (Sections 23 and 24 of Rules and Regulations for the Government of the Parks under the Control of the Fairmount Park Commission, Philadelphia, Pa.)

"No bottles, broken glass, ashes, waste paper, or other rubbish shall be left in any of said parks, except at such place or places as shall be especially designated by the commission." (Section 13 of Rules and Regulations for the Use of Parks, Burlington, Vermont.)

"No person shall deposit, dump, throw or place any earth, rubbish, dust, manure, paper, garbage, slops, or other refuse matter or any sand, stone, lumber or building material, or any substance of any kind in or upon any part of the waters or grounds of any park or park approach except ashes and garbage in suitable boxes or barrels on such days as are designated by the street department for collection, and subject to its regulations, without a permit from the Commissioner of Parks and Public Buildings, and all such permits, if given for building purposes, shall be granted only to the owners or occupants of the property to be built upon or to their authorized agents." (Parks Ordinances, City of Buffalo, New York, Chapter LXVIII, Section 14.)

"No person shall place or suffer to remain in or on any park or parkway, any goods, merchandise or other article in the nature of an obstruction to the use and enjoyment of said park or parkway; nor shall any person place any straw, dirt, chips, paper, shavings, shells, ashes, swill or garbage, or other rubbish, even though not offensive to health, in or upon the same. Nor shall

any person distribute any circulars, cards, or other written or printed matter, in any park or parkway." (Ordinance No. 32, 703, Section 6, Columbus, Ohio.)

"It is hereby declared to be unlawful: To throw or deposit any bottles, tin cans, broken glass, paper, clothes, sheet iron or any rubbish within the limits of said public parks." (City of Pasadena, California, Ordinance No. 539, Section 20.)

Sand boxes or courts. Good drainage of sand courts is the basic sanitary measure. For courts constructed of boards, a pit underneath from two to three feet deep, filled with coarse cinders, provides excellent drainage. The same plan may be followed in the construction of sand courts with concrete walls but without concrete floors. If a concrete floor is used it should rest upon a foundation of cinders with one or more drainage vents through the floor. The sand should be washed frequently in order to remove impurities and raked frequently to remove bits of paper, pieces of food and other debris that inevitably collect in sand courts. It is advisable to change the sand completely once or twice a season. The old sand can be used in jumping pits or under different pieces of apparatus. While it is desirable to have shade for the comfort of the children the sand court should be located so that at some time during the day the sand will be exposed to the direct rays of the sun. Under certain circumstances a removable canopy may be used to secure this desirable condition. In some sections of the country fleas become a pest in sand courts. An application of a weak solution of bichloride of mercury will prevent them from frequenting the sand.

Wading pools. Wading pools that are used intensively each day should be emptied completely at least once during every twenty-four hours, scrubbed and refilled with pure, clean water. It is advisable also, from time to time, to allow the empty pool to bake in the sun. As in the case of swimming pools chemical treatment of the water may be resorted to. The chemicals ordinarily used for this purpose are chlorine and copper sulphate. However, because the children inevitably carry large quantities of sand and dirt into the pool during the course of the day it is almost a necessity to empty the pool each day and clean it of the dirt and sand, making it seldom necessary to use chemicals. The playground instructors should take special note of any children on the playground having any infectious or contagious disease and prevent them from making use of the pool. The growth of algæ in the pool may be prevented by use of copper sulphate or bluestone. This may be applied in the following manner: Pulverize the bluestone to a powder, sprinkle on bottom of pool and use sprinkler or garden hose to dampen it; then sweep until entire floor and sides are covered with a thin, pale blue color. Algæ are not detrimental to health but cause a slippery condition which might lead to accidents.

Swimming Pool Sanitation.

The public swimming pool has no equal as a form of recreation, and in season enjoys a heavy patronage. It is likewise true that the swimming pool can boast no equal as a medium for the spread of certain communicable diseases amongst its patrons unless it be operated under definite sanitary rules and regulations. The following sanitary regulations covering swimming pools are based upon general recommendations proposed by the Committee on Bathing Places during the 1925 Conference of State Sanitary Engineers, the American Public Health Association and the American Association for Promoting Hygiene and Public Baths.

The factors to be considered in dealing with the swimming pool situation from a sanitary standpoint are: Bathing load limits, swimming pool construction, maintenance, sanitary quality of swimming pool waters and standard rules to be observed by bathers.

Bathing Load Limits.

1. There should not be any basic difference in the design of artificial indoor and outdoor pools, so far as the design relates to the sanitation of the pool and water.

2. Bathing load limits will depend upon the following conditions:

A. Frequency of changing the water. (Fill and draw pools.) The total number of bathers allowed to use the pool during any period of time should not exceed twenty persons per one thousand gallons of clean water. "Clean water" is understood to mean new clean water used to refill the pool, new clean water used to replace loss by splashing or during cleaning, water taken from the pool and returned after filtration, or any combination of such waters.

(1) Method of determining bathing load limit indicated above. Assume a pool of 50,000 gallons. Also assume water being withdrawn from the pool and replaced with new water or properly filtered water at the rate of 2,000 gallons per hour. Under paragraph A the volume of new, clean water being added would be sufficient for 2 x 20 (40) persons per hour, or 400 persons during a ten-hour bathing day. If the flowing through or recirculating were continued throughout the 24 hours with bathing limited to ten hours, there would be an accumulation of 28,000 gallons of clean water during the non-bathing period which would permit the use of the pool by 28 x 20 (560) additional persons, or a total of 400 plus 560 (960) persons during the ten-hour day.

B. Frequency of disinfection. (Flowing through or recirculation pools.) The total number of bathers allowed to use the pool during any period of time should not exceed seven persons per 1,000 gallons of water in the pool, unless the pool shall have been completely disinfected once during the period. "Completely disinfected" means that the method of disinfection shall be such as to insure a bacterial quality of water as prescribed under "Bacterial Quality of Water" given below.

(1) Methods of determining bathing load limit indicated above. Assume a pool of 50,000 gallons. Fifty by seven persons (350) may use pool after refilling before disinfection is required. After complete disinfection, 350 additional persons may use the pool, at which time 350 plus 350 plus 300 persons (1,000 persons) will have used the pool and the water must be replaced.

3. An average of 35 square feet of space per adult should be allowed at all times to prevent accidents from overcrowding.

4. The length of the bathing period may be regulated by local conditions and preferences, there being no apparent hygienic reason for placing a limit.

5. The depth of water for diving may be safely established as follows: (*a*) diving from water level, safe depth is five feet. (*b*) Diving from an elevation of three feet, safe depth is six feet. (*c*) Diving from an elevation of six feet, safe depth is eight feet. (*d*) Diving from an elevation of ten feet, safe depth is nine to ten feet.

6. A ten-foot area surrounding the diving plank should be sufficient protection for the diver.

7. The number of persons allowed within the ten-foot area at one time should not exceed three or four at the time a diver is about to enter the water.

Standards for Swimming Pool Construction.

1. The pool should be well lighted.

2. The interior surface of the pool should present a perfectly smooth surface, without cracks, crevices, sharp corners, or pockets to shelter dirt and disease germs.

3. The pool should be surrounded by an overflow trough, and the floor surrounding the pool should be drained so that no water can flow from the floor into the pool.

4. The pool and the surrounding floor should be free from obstructions.

Standards for Swimming Pool Maintenance.

1. Unless there is a constantly inflowing stream of absolutely clean, clear, colorless, fresh water this condition should be approximated by filtration, refiltration and disinfection.

2. Where treatment is needed, filtration alone should not be relied upon to maintain the purity of the pool. There should also be disinfection by hypochlorite of lime, chlorin gas, ultraviolet rays, ozone, or other suitable methods.

3. Visible dirt on the bottom of the pool shall not be permitted to remain more than twenty-four hours. Any visible scum or floating matter on the surface of the water shall be removed within twenty-four hours by flushing or other effective means.

4. There should be an attendant proficient in swimming and life-saving always on duty while the pool is in use, and at other times ingress to the pool room should be prevented.

5. Every pool operator should be supplied with a proper notebook or with blank forms on which should be recorded every day the number of persons using the pool, the volume of new water added, the temperature of the water, and the temperature of the air. Wherever a pool is used by both males and females the number of each and whether adults or children, should also be recorded. At all pools where artificial circulation, filtration, or any chemical treatment is used, a full daily record should be kept of the actual time pumps and filters are in operation, of the time each filter is washed and cleaned, of the time and amount of each chemical used or added, of the time the bottom and sides of the pool are cleaned, the results of all acidity, alkalinity, and excess chlorin tests.

Standards for the Sanitary Quality of Swimming Pool Waters.

1. Excess Chlorin. Whenever liquid chlorin or calcium hypochlorite is used for swimming pool disinfection, the amount of available or excess chlorin in the water at all times when the pool is in use shall not be less than 0.1 p.p.m. nor more than 0.5 p.p.m.

2. Acidity-Alkalinity. Whenever alum or sulphate of alumina is used during purification or repurification of swimming pool waters, the water at all times when the pool is in use shall show an alkaline reaction to methyl orange.

3. Clearness. At all times when the pool is in use the water shall be sufficiently clear to permit a black disk six inches in diameter on a white field when placed on the bottom of the pool at the deepest point, to be clearly visible from the sidewalk of the pool at all distances up to ten yards measured from a line drawn across the pool through the disk.

4. Temperatures. The water in any swimming pool should not be artificially heated to a temperature above 72 degrees F. The temperature of the air at any artificially heated swimming pool must not be permitted to become more than eight degrees F. warmer nor more than two degrees F. colder than the water in the pool at any time when the pool is in use. For best results, it is desirable that air temperatures should be about five degrees F. warmer than pool temperature.

5. Bacteria count agar, two days, 20 degrees C. (This count optional.) Not more than ten per cent of samples covering any considerable period shall exceed 1,000 bacteria per c.c. No single sample shall contain more than 5,000 bacteria per c.c.

6. Bacteria count on agar or litmus lactose agar — 24 hours — 37 degrees C. Not more than ten per cent of samples covering any considerable period shall contain more than 100 bacteria per c.c. No single sample shall contain more than 200 bacteria per c.c.

7. B. Coli, presumptive test. Not more than two out of five samples collected on the same day, nor more than three out of any ten consecutive samples collected on different dates to show a positive presumptive test.

8. Tests for Excess Chlorin. At any pool where liquid chlorin or hypochlorite of lime is used for disinfection, the operator should be supplied with a proper outfit for making the orthotolidin test for excess chlorin and with permanent standards showing maximum and minimum permissible chlorin in the water. Tests for excess chlorin in the water must be made every day that the pool is in use.

9. Tests for Acidity. At any pool where alum or sulphate of alumina is used or where artificial alkalinity is added to the water, the operator should be supplied with a proper outfit for testing acidity and alkalinity, and must make such tests on the water every day that the pool is in use.

Note: For sanitary standards for bathers, see Chapter XIII.

Stream Pollution in Parks and Reservations

The control of the pollution of streams in parks, especially in outlying parks and reservations, is a matter of grave concern wherever such properties exist. In the metropolitan park district of Cleveland the efforts of the park commission to restore and maintain the purity of the streams

flowing through the reservations to the end that they might be used for recreational purposes led to difficulties with the authorities of villages, towns and small cities situated within the district or in the near vicinity of the district. These municipalities naturally needed these streams for the discharge of the effluent from sewage disposal plants or for the discharge of the raw sewage directly.

The park commission early in 1926 requested the committee on public health of the Cleveland Chamber of Commerce to investigate the matter of stream pollution in the district for the purpose of finding out what degree of pollution would be permissible and still retain the recreational use of the streams. On June 16, 1926 the committee submitted a preliminary report embodying the following principles:

1. That streams flowing through the metropolitan park district should be so guarded as in no way to constitute a menace to the health of those using the parks.

2. That a comprehensive plan of caring for the sewage from each watershed as a whole should be formulated.

3. That the County Commissioners of Cuyahoga County should immediately take the lead in the formation of such comprehensive plans.

4. The committee emphatically opposes the installation of small temporary sewage disposal plants which are not in conformity with the general plans for the watershed.

On June 25, 1926, the general superintendent of the metropolitan park board addressed a letter to the chamber of commerce suggesting "the hope that the work of the committee would continue to the end that shortly there may be coming from the committee a report setting forth in terms capable of exact interpretation by a bacteriologist or chemist, the degree of pollution which in the opinion of the committee might be allowed." On July 23, 1926 the committee submitted the following report:

In determining the degree of bacterial contamination which can be allowed in streams which are to be used for swimming purposes, your committee has considered the matter only from the standpoint of the public health. Whether or not it is possible from an economic standpoint to attain the degree of purity which we recommend, is a question we should not be asked to answer.

We believe that the Metropolitan Park Board or other governmental bodies should not encourage bathing (by posting signs, etc.) in streams or other waters which fall below the standards of purity suggested herein. As it is a well-recognized fact that all swimmers swallow a certain amount of water, we believe that the standards for potable water as set up by the United States Public Health Service are the only safe standards to be used in bathing pools.

We are in accord with the following statement in the "Report of the Committee on Bathing Places," of the Annual Conference of State Sanitary Engineers held in April, 1925. The quotation is taken from page 7 of Public Health Bulletin No. 160 of the United States Public Health Service:

"In the opinion of the committee it is desirable that the same standards of hygienic purity of the water should apply to all public bathing waters. There may be some question whether it will be practicable to apply the tentative standard of turbidity to the waters of all natural outdoor bathing places. Your committee feels, however, that it is highly desirable that public health

officials should use every effort to have public outdoor bathing places located only at points where the cleanness and hygienic quality of the bathing waters will conform to these standards."

The following specifications have been set up by various authorities to govern the purity of water:

1. Standard adopted by the United States Treasury Department for drinking and culinary water. This standard was approved by the Fourth Annual Conference of State Sanitary Engineers in 1923, and is used as a basis of the regulations governing swimming pool sanitation in several states. (Reprint No. 1029 from the Public Health Reports, page 4.)

"(1) Of all the standard (10 c.c.) *portions* examined in accordance with the procedure specified below (*), not more than 10 per cent shall show the presence of organisms of the *B. coli* group.

(2) Occasionally three or more of the five equal (10 c.c.) *portions* constituting a single standard *sample* may show the presence of *B. coli*. This shall not be allowable if it occurs in more than —

(*a*) Five per cent of the standard samples when twenty or more samples have been examined.

(*b*) One standard sample when less than twenty samples have been examined."

* The procedure referred to is the standard method adopted by the American Public Health Association. (See "Standard Methods for the Examination of Water and Sewage," Sixth Edition, A.P.H.A. Laboratory Section.)

2. Section 519 of the Municipal Code of Cleveland requires the following degree of purity in the bathing pools in the city:

"(1) Every bathing pool shall be emptied and thoroughly cleaned at least once in every seven days, and in addition thereto shall be completely emptied and thoroughly cleaned whenever the number of intestinal bacteria in a cubic centimeter of the water shall exceed ten as determined by standard tests of the division of health."

(The Division of Health interprets this section to mean that a total bacterial count of not to exceed one thousand bacterial groups per cubic centimeter, with an absence of colon group pollution, indicates satisfactory operation of bathing pools.)

With the above standards as a basis, we recommend that the following standard be considered the degree of purity which should be maintained in streams in the county which are to be used for bathing purposes: The total bacterial count should not be allowed to exceed one thousand bacterial groups per cubic centimeter. Not more than two out of ten samples containing ten cubic centimeters of water each should be allowed to show organisms of the *B. coli* group, when tested according to the standard method of the American Public Health Association.

It will be noted that this standard is a little lower than that set up by the City of Cleveland for its outdoor pools. In our opinion, if streams are to be used for bathing, coherent sewage disposal plans for the whole county must be formulated, to the end that the water in the streams will conform to the above standard. In some cases it will be found feasible to deposit the effluent from a disposal plant, sufficiently purified to avoid a nuisance, below the swimming pools. In other streams, plants which will make the effluent completely innocuous will be necessary. In any event, if the water in a pool falls below the suggested standard, arrangements should be made to so disinfect the inflow to the pool that it is brought up to the standard.

We believe that the establishment of any standard less than the above would be injurious to the health of the community.

During the course of their study of the Cleveland Metropolitan Park situation the committee on public health of the chamber of commerce collected information concerning the subject of the control of stream pollution in parks and reservations from other cities throughout the United States. The following are extracts from some of the replies received from other cities:

1. *Chicago and Cook County, Illinois.* Communication from the Sanitary District Commission:

"The sanitary district of Chicago is a municipal corporation organized under the laws of Illinois by act of the Legislature and the amendments thereto, for the purpose of disposing of the sewage from Chicago and the surrounding cities. The district at present covers some 443 square miles and includes 50 cities and villages. The population of this area is over 3,300,000. The act gives us the power to build sewage treatment works and intercepting sewers for the purpose of treating the sewage and thereby keeping the streams clean. In accordance with these powers, we have built and are operating five sewage treatment works at the present time, and have under construction what will be the largest sewage treatment works of its type in the world known as the North Side Sewage Treatment Works, to handle 800,000 people.

Our territory overlaps a large proportion of the holdings of the forest preserves of Cook County. In con-

nection with our endeavors to keep the streams clean it has been necessary to build what is known as the Des Plaines River Sewage Treatment Works, handling some 55,000 population draining into the Des Plaines River. We further have in process of plan, other works and intercepting sewers to remove the sewage from the Des Plaines River and Salt Creek, which will be built as our finances permit. I will check up the answers to your questions in numerical order:

1. Persons or municipalities are allowed to empty sewers into the streams of the sanitary district subject to the regulations of the sanitary district and the state. In general, there has been no objection to storm water sewers. Most of the sewers entering, however, are combined.

2. On the Des Plaines River, the present degree of treatment in the Des Plaines River Works is an activated sludge plant which gives a highly nitrified, clear, stable effluent. On the north branch of the Chicago River there are three small Imhoff and trickling filter plants which give a high grade effluent of like character. In both these streams, the low flow is very small, so that it is necessary not only to retain the settling suspended matter, but also to treat the liquid as well.

3. Up to date, the Board of Trustees have operated under the policy that treatment of municipal sewage at least was the duty of the sanitary district within its borders. The only coöperation that we have received is from the villages asking assistance. In some cases they have furnished a free site, and in all cases they furnish water. In most cases they bring the sewage to the plant, although where two or more villages are handled together the sanitary district builds the necessary intercepting sewer. The coöperation thus resulting has been largely voluntary, but has come about through the desire of the villages to have intercepting sewers and treatment works.

4. In general, we have not assisted the other municipalities in financing sewage treatment works, because the sanitary district is the authority empowered to build them. In some cases we have, however, coöperated in the construction of a joint sewer which serves as an intercepter, as well as an outlet sewer where two or more municipalities are interested. The proportion of cost under such arrangement is set by a contract based upon the particular case. We have not been interested in any way in building local sewers, and do not contribute toward their cost.

5. I regret that we are all out of the copies of the statutes under which we operate. We are a municipal corporation with bonding and taxing powers for the purpose of building and operating works to dispose of the sewage of our district, and are empowered to build the necessary intercepting sewers, pumping stations and treatment works for that purpose."

2. *Boston Metropolitan District.* Communication from the Boston Chamber of Commerce:

The metropolitan park system is surrounded by territory which varies from urban to farm land. Most of the bathing facilities are in ocean reservations, such as Revere Beach and Nantasket Beach. The problem of stream pollution in the metropolitan district is probably not a difficult one because of the extensive metropolitan sewage system. This system is one division in the Metropolitan District Commission, the others being parks and water. Sewage from the district which includes all the townships north and east of Woburn, Lexington, Newton and south to Milton and Quincy is emptied into a trunk sewer and taken far out to sea. Most of the difficulty in stream pollution is probably in the Charles River. A special statute, a copy of which is appended hereto, governs this stream. The provisions giving the commission general control over stream pollution are also given below:

Extracts from Chapter 92, General Laws of Massachusetts Metropolitan Sewerage, Water and Parks. Section 39 (*Prohibiting pollution of Charles River*). The commission may make rules and regulations prohibiting the pollution of the Charles River within the metropolitan parks district. Any person violating any rule or regulation made hereunder shall be punished by fine not exceeding one thousand dollars.

Section 42 (*Granting towns locations for sewers*). The commission may grant to towns locations for common sewers and drains in and across reservations or boulevards under its care and control. Whenever a drain or sewer is laid in locations so granted, the board of town officers respectively authorized to levy and collect assessments for the laying of drains and sewers in such town shall have the same power to levy and collect assessments for drains and sewers laid in said reservations or boulevards as is given to them by law in the case of drains and sewers laid in the public ways of such town; provided, that no such assessment shall be levied upon any lands belonging to the commonwealth.

Section 76 (*Prevention of pollution of Charles River basin*). The commission may order the removal of all sewage and other polluting matter or factory waste as a common nuisance from the Charles River and its tributaries below Waltham and from the Charles River basin; and no sewer, drain or overflow or other outlet for factory or house drainage or for any other drainage shall hereafter be connected with said basin or the river below Waltham without the approval of the commission.

3. *Bronx River Parkway, New York City and Westchester County, New York.*

In 1907 the legislature of New York State authorized the appointment of the Bronx Parkway Commission for the purpose of preserving the waters of the Bronx River from pollution, creating a reservation of the lands on

either side of the river, etc. It was authorized to acquire lands both in the City of New York and in the County of Westchester just north of New York. There was considerable delay in getting the approval of New York City, so that the Commission did not begin to function until 1913. In 1914 the Commission adopted two sanitary regulations, as follows:

1. No sewage, factory wastes, oils, oily substances or pollution of any kind or character shall be discharged into the Bronx River or upon lands in the reservation, or into any tributary stream, storm sewer or drain flowing into the Bronx River.

2. No ashes, garbage, fecal matter, waste paper, excavated materials, old metal or refuse matter of any character shall be deposited in or near the Bronx River or upon the lands of the Commission, or in brooks, drains or storm sewers tributary to the river, in such a manner as shall result in polluting the water of the river.

Under these regulations, the Commission succeeded in clearing up the waters of the Bronx River to such an extent that the Westchester County Park Commission, which is an outgrowth of the Bronx River Parkway Commission, speaks, in its 1924 report, of the Bronx River Commission as having strongly influenced sentiment in favor of additional parkways to "forestall the recurrence elsewhere of nuisances and unsanitary conditions such as formerly existed in the Bronx River Valley."

In answer to specific questions asked by the secretary, the Westchester County Park Commission states as follows:

1. The territory surrounding our Westchester County Parks ranges from urban to farm lands.

2. The fresh water streams and lakes in Westchester County are not used to any extent for bathing or recreational purposes. The upper waters of two streams are still used for water supply purposes, but it is only a question of ten or fifteen years until the density of population surrounding them will make the water unsafe for use. The Bronx River is used a little for bathing, but this probably will be discontinued. The parks along the Hudson River and on the Long Island Sound shore are used for bathing, but the problem of bathing facilities in the interior is being met by the construction of concrete swimming pools in the parks.

3. Storm water drains are allowed to discharge into the streams not being used for water supply, but sanitary sewers are not allowed.

4. The statute creating the Bronx River Parkway Commission gave the Commission authority to preserve the waters in the river from pollution by creating a reservation of lands on either side of it.

5. To provide sewage facilities for the cities, towns and villages along the Bronx River Valley, a special enactment authorized the construction of the Bronx River Valley trunk sewer about eleven miles in length, from North White Plains to the southerly boundary of Westchester County. Municipal and individual sewers formerly discharging into the Bronx River are now connected with this trunk sewer. The construction of the trunk sewer was financed by the county, but is being entirely refunded by assessments against property within the drainage area, paid in yearly installments distributed over thirty years. The Westchester County Park Commission was recently constituted to also act as the Westchester County Sanitary Sewer Commission to prepare and report preliminary plans, including estimates and proposed assessment areas for sanitary trunk sewers and sanitary outlet sewers in the entire County of Westchester. In rapidly developing communities there is a demand for outlet sewers, and the intention is to assess the cost against the property benefited in long-term installments.

It is interesting to note the remarks of the chief engineer of the state health department at a conference held in Cleveland March 18, 1926, to consider stream pollution in Cuyahoga County, Ohio. He stated that the state health department now has final jurisdiction over stream pollution. It recognizes that streams are sources of water supply, are means of drainage, and are means of removing sewage and remains of industrial wastes. In the latter use the state department of health presumes that sewage is rendered "fairly decent" before it is emptied into them. The last use of the streams is very important in the belief of the department. The department also recognizes that streams are increasingly being used for recreation purposes, but that this use is not necessary, although highly desirable. The position of the state department of health is as follows: It sets up a minimum of treatment which sewage must receive before it is emptied into any stream in the state. The minimum would keep the stream good from

an æsthetic standpoint, but would not necessarily keep it fit for bathing and other recreational purposes. If certain localities wish to go beyond this specific minimum and keep their streams fit for recreational purposes, the state department is perfectly willing, but it cannot compel this further treatment. It will also determine whether or not specific methods of treatment will bring about the result desired by many communities.

This statement is no doubt fairly representative of the interpretation of the powers of state health departments all over the country. A large number of states have laws regarding the control of the pollution of streams, the enforcement of which in most instances comes under the several departments of health. If the above statement is fairly representative of the general attitude of state health departments respecting the recreational use of streams, it is not likely that much help can be expected from this direction until a growing public sentiment maximizes the importance of streams for recreational purposes.

STATE LAWS RELATING TO SANITATION OF SWIMMING PLACES

California. Assembly Bill No. 141, Chapter 63. An act providing for the sanitation, healthfulness and cleanliness and safety of swimming pools, public bathhouses, swimming and bathing places; regulating the granting and revocations of permits therefor from the state board of health; providing for the inspection of such places; declaring places and things in violation of this act to be nuisances dangerous to health and providing for the abatement of the same; making violations of this act misdemeanors; and providing for the punishment of the same. (Approved April 6, 1917.) The people of the State of California do enact as follows:

Section 1. The state board of health shall have supervision over the sanitation, healthfulness and cleanliness and safety of swimming pools, bathhouses, public swimming and bathing places and all related appurtenances and is hereby empowered to make and enforce such rules and regulations pertaining thereto as it shall deem proper.

Section 2. It shall be unlawful for any person, persons, firm, corporation, institution or municipality in any district, town, city, county, or city and county, to construct or to add to or modify, or to operate or to continue to operate any swimming pool, public bathhouse, bathing or swimming place, or any structure intended to be used for swimming or bathing purposes without an unrevoked permit so to do from the state board of health. This permit shall be obtained in the following manner: any person, persons, firm, corporation, institution or municipality desiring to construct, add to or modify, or to operate and maintain any swimming pool, public bathhouse, bathing or swimming places or structures intended to be used for swimming or bathing purposes within the State of California shall file application for permission so to do with the state board of health, which application shall be accompanied by detailed maps, drawings, specifications and description of the structure, its appurtenances and operation, description of the source or sources of water supply, amount and quality of water available and intended to be used, method and manner of water purification, treatment, disinfection, heating, regulating and cleaning; life-saving apparatus, and measures to insure safety of bathers; measures to insure personal cleanliness of bathers; method and manner of washing, disinfecting, drying and storing bathing apparel and towels, and all other information and statistics that may be required by the state board of health; whereupon, the state board of health shall cause an investigation to be made of the proposed or existing pool or public bathing places and if it shall determine as a fact that the same is or may reasonably be expected to become unclean or unsanitary or may constitute a menace to public health, it shall deny the application for permit; if it shall determine as a fact that the same is or may reasonably be expected to be conducted continuously in a clean and sanitary manner and will not constitute a menace to public health, it shall grant the application for permit under such restrictions as it shall deem proper.

Section 3. For the purpose of this act the state board of health or its inspectors shall at any and all reasonable times have full power and authority to, and shall be permitted to enter upon any and all parts of the premises of such bathing and swimming places to make examination and investigation to determine the sanitary condition of such places and whether the provisions of this act or the rules and regulations of the state board of health pertaining thereto are being violated. The

state board of health may from time to time at its discretion publish the reports of such inspections in its monthly bulletin.

Section 4. Any permit granted by the state board of health as provided in this act shall be revocable or subject to suspension at any time by formal action of the state board of health if it shall determine as a fact that the swimming or bathing place or places are being conducted in a manner insanitary, unclean or dangerous to public health.

Section 5. Any swimming pool, public swimming or bathing place or places, constructed, operated or maintained contrary to the provisions of this act, are hereby declared to be public nuisances, dangerous to health. Such nuisances may be abated or enjoined in an action brought by the local or state board of health or they may be summarily abated in the manner provided by law for the summary abatement of public nuisances dangerous to health.

Section 6. Any person, firm or corporation, whether as principal or agent, employer or employee, who violates any of the provisions of this act shall be guilty of a misdemeanor, and each day that conditions or actions, in violation of this act, shall continue, shall be deemed to be a separate and distinct offense, and for each offense, upon conviction, he shall be punishable by a fine of not less than twenty-five dollars nor more than five hundred dollars, or shall be imprisoned in the county jail for a term not exceeding six months, or by both such fine and imprisonment.

Rules governing sanitation, safety and cleanliness of swimming pools. (California State Board of Health, Special Bulletin No. 38, 1923.)

Rule 1. Bacterial Quality of Pool Water. The bacterial contamination of the water in the pool shall be maintained at a practical minimum. The evidence is convincing that it is feasible and practicable to maintain the water in the pool in such condition that the total colonies on standard agar media, incubated for twenty-four hours at 37.5 degrees Centigrade, will not exceed one thousand per cubic centimeter and B. Coli will not be confirmed in more than one-half of one cubic centimeter portion of the water.

Rule 2. Clearness of Pool Water. Water in the pool shall at all times of use be sufficiently transparent, under existing lighting conditions, when the water surface is not excessively agitated by bathers, to enable a person standing at the side of the pool to see distinctly the bottom of the pool where the depth of water is six feet or less.

Rule 3. Sanitation of Premises. Dressing rooms, hallways, toilet rooms, shower rooms or other places to which patrons of a bath have access, shall be kept clean and well ventilated at all times.

Rule 4. Sputum Contamination. Facilities for adequately protecting the pool water against unnecessary sputum contamination by bathers shall be provided. The device used in practically all up-to-date pools to meet this requirement is the combined overflow and expectoration gutter, extending completely around the pool, coupled with maintaining a high water level.

Rule 5. Diseased Persons. All persons known to be or suspected of being afflicted with infectious diseases shall be excluded from the pool.

Rule 6. Personal Cleanliness. Contamination of the pool resulting from a lack of personal cleanliness of bathers shall be maintained at a minimum. This rule necessitates providing ample and convenient bathing and toilet facilities. The swimming pool, it must be remembered, is not a bathtub, but a place for recreation, which it is the intention of these regulations shall be a healthy one. The pool is not to be considered as a proper place to cleanse the body and every practicable means should be provided to prevent its use as such. The number of new arrivals at a bathhouse per hour of each sex that one fixture for each sex will accommodate is about as follows:

	Men	*Women*
Shower	20	40
Toilet	40	80
Urinal	60	

Rule 7. Safety of Bathers. Construction and appliances shall be such as to reduce to a practical minimum danger of drowning and of injury to bathers and from falls or collisions.

Rule 8. Laundering. Bathing suits and towels when distributed by the pool management to bathers shall be clean and free from excessive bacterial contamination. Clean, safe suits require more than disinfection. They require thorough washing in warm water, using soap, followed by at least three rinses and by some form of disinfection, and finally completely dried.

Rule 9. Notices. The management of the pool shall have printed and posted in conspicuous places about the establishment, notices containing these regulations with or without the attached discussion, and also notices informing the public briefly of the requirements to which they are subject in the maintenance of a safe and sanitary pool.

Rule 10. Operating Records. A written record of all operations influencing sanitation of the pool shall be maintained by the management and kept at all times available to the State Board of Health.

Rule 11. Report with Application for Permit. Application for permit in accordance with the swimming pool act shall be accompanied by a detailed report showing in just what manner it is proposed to comply with each and all of the rules herein and more particularly with Rules 1, 2 and 3. In the case of new pools, or as required, application for permit shall be accompanied by detailed plans of the swimming pool and appurtenances.

STATE LAWS RELATING TO SANITATION OF ORGANIZED CAMPS

Maine. Regulations adopted by the State Department of Health. Summer camps in the State of Maine will be rated under the following classifications, A, B, C and D.

Class A

Site. The sites of camps should be favorably located on high ground with sandy and gravelly soil. Swampy areas should be avoided if possible. Good, natural drainage and high, dry lands are very desirable.

General appearance and general condition. Camps should be so situated that they may get plenty of sunshine, all underbrush should be kept cut down and everything done to make the camp as sanitary as possible. Too many shade trees prevent proper drying and sunning of tents, clothing, etc.

Water supply. The source of water supply for domestic, culinary and drinking purposes must be absolutely beyond the reasonable limit of suspicion as demonstrated by careful survey of watershed, and by standard methods of water analyses.

Toilets. Adequate numbers of flush toilets in clean and well ventilated and lighted rooms must exist with adequate water supply to efficiently flush the toilets, or approved chemical toilets.

Sewerage disposal. This must cause no nuisance whatsoever and in no way endanger the public health. Satisfactory disposal may be accomplished by the following methods: (1) Connection to the city sewerage system. (2) Septic tank and subsurface irrigation of proper design. (3) Tank treatment with the disposal of effluent into a large body of water, so that (*a*) no water supply is polluted; (*b*) no nuisance caused; (*c*) no bathing beaches are contaminated; (*d*) nor public health endangered in any other manner. (4) Cesspool that in no way endangers the water supply or is a nuisance, although this is to be merely tolerated at best, but seldom recommended. (5) The discharge of raw sewerage into lakes and streams cannot be approved except under the most unusual conditions.

Garbage collection and disposal. Unless garbage can be disposed of immediately, it should be stored in G. I. cans with covers. Cans should be kept thoroughly clean and thoroughly cleansed after each emptying. Places where cans are located must be kept neat and clean so as not to attract flies and should be preferably kept within a screened area. The following methods of disposal are satisfactory. (1) Removal from the premises and buried to be covered by at least one foot of earth immediately upon dumping. (2) Disposal by throwing into lakes or streams is not lawful. (3) Feeding to hogs or chickens. The amount fed should only be that which may be consumed at each feeding, and the feeding place should be maintained in a neat and clean condition. All feeding places should be raked and cleaned at least once each day, then the refuse disposed of by burial or incineration. (4) By burning in well constructed incinerators. (5) Refuse must not be thrown into the woods or ground, unless it is covered by earth. Kitchen and dining room must be screened to protect from flies and mosquitoes, and food handling facilities must be scrupulously clean.

Ice box. The ice box must contain two compartments; keep the dairy products separated from the meat products.

Milk supply. Milk supply should be preferably from tuberculin tested cattle and should be handled in a satisfactory manner.

Buildings. All buildings should be clean, well ventilated and lighted, and pleasing in appearance. Interior walls should be such as to be easily kept clean and neat.

Flies. Flies are a menace to health and will not be tolerated.

Mosquitoes. Every means should be taken to destroy the breeding places of mosquitoes, as they are very annoying and may cause much discomfort. Sleeping quarters should be provided with suitable mosquito netting so that the sleepers will be protected from the mosquitoes at night.

Bathing beach. The water must be absolutely free from sewage disposal, and must not be used to such an extent that the bathing load is exceeded. The bottom should be preferably of sand or gravel. The water should be free from floating material. No litter or unsightly material should be tolerated on the shore or in the water.

Infirmary. For Class A camp infirmary must be a separate building some distance away from other buildings.

Drinking cups. Common drinking cups and common towels prohibited by law.

Food Handlers. Must be free from infectious diseases.

Class B

When the resort falls short of Class A requirements, it should be rated as Class B.

Class C

This is what is termed as the privy resort and the other sanitary conditions in a similar crude state. Unless all other features are in excellent condition a camp with privy toilets should not be given more than the Class C rating. Toilets of the pail or earth privy type must be screened to protect from flies, and cleaned twice a week or oftener if necessary.

Class D

In this type of camp nearly all of the sanitary standards are violated.

California. Regulations Governing Camp-Ground Sanitation. Adopted December 24, 1920; amended

February 3, 1923. The following regulations shall apply to any city, county, city and county, village, community, institution, person, firm or corporation, maintaining or offering for public use within the State of California any tract of land on which persons may camp or picnic either free of charge or by payment of a fee.

Supervision.

Section 1. The management of every public camp or picnic ground shall assume responsibility for maintaining in good repair all sanitary appliances on said ground, and shall promptly bring such action as may be necessary to prosecute or eject from such ground any person who willfully or maliciously damages such appliances or any person who in any way fails to comply with these regulations.

Section 2. At least one caretaker shall be employed by the management to visit said camp or picnic ground every day that campers or picnickers occupy said ground. Such caretaker shall do whatever may be necessary to keep said ground and its equipment in a clean and sanitary condition.

Section 3. Each and every owner and lessee of any public camp or picnic ground shall be held responsible for full compliance with these regulations.

Section 4. Supervision and equipment sufficient to prevent littering of the ground with rubbish, garbage, or other refuse shall be provided and maintained. Fly-tight depositories for such materials shall be provided and conspicuously located. Each and every camp or picnic spot on said ground shall be within a distance of not over two hundred feet from such a depository. These depositories shall not be permitted to become foul-smelling or unsightly or breeding places for flies.

Camping Space.

Section 5. Each camping party shall be allotted usable space of not less than three hundred and fifty square feet.

Water Supply.

Section 6. A water supply of sanitary quality shall be provided in ample quantity to meet all requirements of the maximum number of persons using such ground at any time. Said water supply shall be easily obtainable from its source or on a pipe distribution system, faucets from which shall be located not more than three hundred feet from any camp or picnic spot within such ground. If water supply is obtained direct from above-ground source, said source must be covered properly and water withdrawn by means of open pipe or faucet. In no case can dipping from open springs or wells be permitted.

Section 7. Any water considered unsafe for human consumption in the vicinity of such ground, to which campers or picnickers may have access, shall be either eliminated or purified, or shall be kept posted with placards definitely warning persons against its use.

Protection Against Fires.

Section 8. No fires shall at any time be so located as to endanger automobiles or other property in the camp ground. No fires shall be left unattended at any time, and all fires shall be completely extinguished before leaving.

Sewage and Refuse Disposal.

Section 9. The method of final sewage or refuse disposal utilized in connection with the operation of any camp or picnic ground shall be such as to create no nuisance.

Section 10. Fly-tight privies or water-flushed toilets shall be provided and shall be maintained in a clean and sanitary condition. Separate toilets for men and women shall be provided, one for each twenty-five men, and one for each twenty-five women, or fraction thereof of the maximum number of persons occupying such ground at any time. No camp or picnic spot within such ground shall be at a greater distance than four hundred feet from both a men's and a women's toilet. The location of all toilets shall be plainly indicated by signs.

Section 11. A sufficient number of iron hoppers or basins shall be provided, and each shall be connected with a sewerage system or covered cesspool; these are to be used for the disposal of domestic waste waters.

Construction and Maintenance of Building.

Section 12. If cottages, cabins, dwelling houses or other buildings to be used for human habitation are erected in any public camping ground, the following minimum requirements in their construction shall be observed:

Note. In addition to observing these requirements, all local building ordinances must be complied with.

1. All floors shall be raised at least eighteen inches above the ground and space underneath shall be kept free from obstruction.

2. All floors shall be constructed of tongue and groove material.

3. Interior walls shall be surfaced lumber or other material that may easily be kept clean and shall be constructed so that they may always be kept in a thoroughly clean condition.

4. No room used for sleeping purposes shall have less than five hundred cubic feet of air space for each occupant.

5. The area of window space in each sleeping room shall be equal to at least one-eighth of the floor area of the room.

6. Windows of sleeping rooms shall be so constructed that at least half of each window can be opened.

7. Cooking shall not be permitted in any sleeping room.

8. If kitchen is provided, it must be equipped with running water and sink connected with a sewerage system, septic tank or a covered cesspool. Kitchen must be screened against flies and mosquitoes.

9. If private toilet is provided it must be water-flushed and connected with a sewerage system or septic tank. Room containing such toilet must have window opening to the outside air and its floor must be constructed of impervious material.

10. If bathroom is provided it must have an impervious floor and must have window opening to outside air. Bath and lavatory must be connected with sewerage system, septic tank or cesspool.

11. Covered metal garbage containers must be provided; at least one for every two buildings.

12. Building shall be cleaned daily and after each occupancy shall be thoroughly cleaned. If bedding is provided it must be kept in a clean condition.

Penalties.

Section 13. Failure to comply with the foregoing regulations shall be deemed sufficient cause for declaring the premises a public nuisance under the provisions of section 370 of the Penal Code of California.

Section 14. These regulations shall be printed and kept posted in several conspicuous places in every camp or picnic ground.

Florida. Florida State Board of Health, Rule No. 91, 1923.

Section 1. Camps shall be located on well drained sites, susceptible to quick drying following rains. Camp sites must not be located on or near marshes or bottom lands; they must be reasonably well shaded but not covered with heavy, dense growths and underbrush. Preferably the soil texture shall be porous sand or sand clay.

Section 2. Camp sites shall be of ample size to prevent overcrowding and prevent conditions not conducive to good health or morals. Sites shall be subdivided in such a manner that every car or camping outfit shall have at least one thousand square feet of ground surface. The site shall be subdivided and marked off into rectangular lots, each lot not less than twenty-five by thirty-five feet in plan. Lots should be grouped in blocks with streets at least eighteen feet wide between each block. There shall not be more than thirty cars parked per acre of ground.

Section 3. Camps shall be in charge of an attendant at all times, who shall superintend the camp and be responsible for the enforcement of these sanitary regulations.

Section 4. Camps must be provided with an adequate supply of water of a good sanitary quality from a source approved by the State Board of Health. Where municipal supplies or deep flowing wells of known quality are available, same shall be used. Waters from shallow sources must be examined and sites approved by the State Board of Health. When necessary to use shallow ground sources the method of construction, installation and operation shall be approved by the State Board of Health. Shallow driven point wells shall be installed and protected in accordance with instructions from the State Board of Health. Wherever a water hydrant is located a drip box about eighteen inches in diameter and twelve inches deep filled with cinders or brick bats shall be provided.

Section 5. Water hydrants shall be located so no hydrant will be more than one hundred feet from any individual camp unit. Hydrants shall also be located near the stoves, laundry and showers.

Section 6. Camps shall be provided with safe, sanitary means of sewerage and waste disposal. Where city sewerage is available water-flush toilets shall be installed and maintained; however, in the absence of sewerage (*a*) septic tanks with water-flush fixtures, (*b*) septic privies, or (*c*) an adequate number of approved sanitary privies recommended by the State Board of Health shall be installed. Sanitary privies shall be constructed in such manner and in such number as to prevent nuisance.

Section 7. All garbage and other refuse shall be deposited in large, tightly-covered metal cans placed at frequent intervals around the grounds. There shall be at least one can for every ten cars. Cans must be kept tightly covered at all times. Once daily the contents of every can must be collected and disposed of. Where city scavenger service is available it shall be used, but in its absence the camp shall be provided with a small incinerator as specified by the State Board of Health.

Section 8. Camps shall be provided with conveniently located shower-bath compartments for both sexes, also with a designated space where laundrying and car washing can be carried on. No laundry, animal washing, car washing or other slop creating practices shall be carried on at the individual car sites.

Section 9. Each camp shall be provided with a small custodian's building located at the entrance; each tourist entering the camp must register with the custodian and from him receive a registration card, a site allotment and a copy of the camp rules.

Section 10. Registration cards prepared as recommended by the State Board of Health shall be filled out in duplicate and once monthly a record shall be submitted to the State Board of Health for file.

Section 11. Throughout each camp the rules and regulations of the State Board of Health must be conspicuously posted, also the rules governing each camp. The campers must abide by every rule; those who do not comply with all the regulations will be treated as public nuisances and handled accordingly.

Section 12. Full detailed plans of each camp shall be submitted to the State Board of Health in duplicate for examination and subsequent approval. Plans shall show (*a*) dimensions of sites; (*b*) indicate direction of ground slope and location of trees; (*c*) show locations with dimensions of water supply hydrants, relative location of water source, toilets, laundry space, custodian's house, etc.; (*d*) plan of site subdivision and any

other physical data of value in making examination. In addition to the plan, a sworn statement shall be submitted, giving details of camp operation, rules of the camp, and other explanatory data. Plans should be prepared on sheets not to exceed twelve by eighteen inches. Following approval a certificate will be issued by the State Board of Health and later a full list of approved camps will be published throughout the state. Camps which do not comply with the provisions of the above sections and which are not duly approved shall be classed as public nuisances.

Iowa. Resolutions of State Board of Health, 1922. Whereas, every municipal and private automobile camp in the State of Iowa will be used during the season by thousands of tourists, and whereas, for the protection of the public health such camps should have sanitary provisions, therefore be it resolved, that local boards of health under the provisions of Section 2568 of the Code of Iowa, require that:

1. Water of approved quality shall be piped to convenient places throughout the camp grounds and faucets located at convenient places, where water supply systems are available. In grounds having an unpiped water supply, a sign of warning shall be placed directing attention to safe water. Under no circumstances shall water be dipped from a spring, barrel or any other receptacle.

2. A sample of all drinking water in the camping grounds shall be sent in a receptacle which can be obtained from the Director, State Board of Health Laboratories, Iowa City, Iowa, for certification as to its potability.

3. A fly-proof building shall be provided to house the water-flush toilets, and care shall be taken to keep it clean at all times.

4. In camp grounds not provided with water-flush toilets a good cement pit with a fly-proof house shall be erected over it. Each day it shall be the caretaker's duty to sprinkle unslacked lime into the pit, and great care shall be taken to keep the premises clean at all times. Septic tanks may be used in lieu of the pits, and must be erected according to the specifications of the State Board of Health.

5. Garbage must be kept in covered metal containers distributed through the grounds at convenient locations, and the contents shall be collected daily and removed from the premises and taken care of in the same manner as city garbage.

6. Garbage cans shall be kept clean on the inside, and it is recommended that they shall be burned out weekly or that unslacked lime be sprinkled over the sides and bottoms.

7. The grounds shall be in charge of a competent caretaker whose duty it shall be to see that the grounds are kept in the most sanitary condition, free from rubbish, etc., and he shall be held strictly responsible for any infraction of these rules.

Kansas. State Board of Health. Powers and duties to regulate tourists' camps. (Section 10122, General Statutes of Kansas, 1915.)

They shall advise officers of government, or other state boards, in regard to location, drainage, water supply, disposal of excreta, heating and ventilation of public buildings. They shall make sanitary inspections and survey of such places and localities as they deem advisable; and when they believe there is a probability that any infectious or contagious disease will invade this state from any other state or country, it shall be their duty to take such action and adopt and enforce such rules and regulations as they may, in the exercise of their discretion, deem sufficient in preventing the introduction or spread of such infectious or contagious disease or diseases within this state. The better to accomplish such objects, they are empowered and directed to establish and strictly maintain quarantine at such places as they may deem proper, and are further empowered to make and enforce any regulations to obstruct and prevent the introduction or spread of infectious or contagious diseases to or within the state. They may establish quarantine ground in some suitable place and establish the quarantine to be observed in such locality, and may there cause to be erected temporary buildings or hospitals, necessary for the medical treatment of any persons who may be kept in quarantine and affected with contagious or infectious disease, for the inspection or disinfection of travelers' baggage, merchandise, and articles at such stations or grounds, as well as the purification of persons, baggage and articles, and require the transportation of passengers from said quarantine station.

New Tourist Camp Order.

At a regular meeting of the Kansas State Board of Health, held in the office of the Secretary, Topeka, on February 15, 1923, and under the authority of Section 10122 of the General Statutes of 1915, the following regulations relating to tourist camps were unanimously adopted and ordered printed in the official state paper.

1. All camps shall be in charge of an attendant whose duty it will be to keep the camp in a sanitary condition at all times.

2. All camp sites shall be well drained.

3. An adequate supply of potable drinking water shall be provided on all camp grounds. Water from wells other than a public supply shall not be used until it has been approved by the State Board of Health.

4. Modern flush toilets shall be provided where sewer connections are possible.

5. Where sewer connections are not possible, sanitary, fly-proof privies, approved by the State Board of Health, shall be provided.

6. All garbage and refuse shall be stored in metal cans with tight covers and shall be removed from the premises and disposed of daily.

7. Garbage and refuse shall be disposed of by incineration or burial.

8. Those in charge of camps shall make and placard such rules and regulations as are necessary to govern the use of the camp and keep it in a sanitary condition.

9. Inspections of tourist camps shall be made under the direction of the State Board of Health as often as practicable and a report of findings made to those in charge. If the recommendations are not carried out and the camp is found in an insanitary condition upon a second investigation the camp will be declared a nuisance to public health and ordered closed, and shall not be re-opened until such time as the recommendations have been carried out.

CHAPTER XVII

ZOÖLOGICAL PARKS AND AQUARIUMS

SECTION I. ZOÖLOGICAL PARKS

There are in the United States at the present time (1925) over one hundred and twenty-five collections of wild animals. As to size these collections are of varying degrees of importance. With but very few exceptions all the collections are maintained as features of public park service. The following table shows the date of establishment, number of acres devoted to zoo purposes and the number of specimens in some of the zoölogical parks or gardens in the United States. Statistics are, for the most part, as of 1925.

City	*Year Established*	*Acres Site*	*Number Mammals*	*Number Birds*	*Number Reptiles*	*Total Specimens*
New York City[1] (Bronx Park)	1898	264	553	2,355	....	....
Chicago[2]	1923	196	....	....	....	....
Philadelphia	1876	40	....	....	....	3,300
Detroit[3]	1925	100	....	....	....	....
Cleveland	1882	....	....	....	....	....
St. Louis	1915	72	315	804	59	1,178
Boston	1911	80	235	1,700	....	1,935
Baltimore	1886	10	....	....	....	....
Pittsburgh	1898	10 12	75	500	14	589
Los Angeles	1900	40	39	No data	....	....
Buffalo	1895	17.6	130	123	86	339
San Francisco	1892	40	700	4,000	....	4,700
Milwaukee[4]	1904	....	367	599	23	989
Washington	1890	170	503	982	135	1,620
Cincinnati	1875	78	434	1,029	39	1,602[6]
New Orleans[5]	1919	50	139	358	28	525[6]
Kansas City, Mo.	1909	200	127	200	19	346
Seattle	1903	30	200	576	60	836
Rochester, N. Y.	1900	10	82	118	12	212
	1912	25	....	....	....	....
	1914	2	....	....	....	....
Portland	1905	40	150	200	10	360
Denver	189–	50	112	658	1	771

Note: Acknowledgment is gratefully made by the editor for the valuable assistance of Dr.C. Emerson Brown, Director of the Philadelphia Zoölogical Garden, in the preparation of the material in this chapter.

[1] There are two other collections of wild animals in New York City, one in Central Park, Manhattan, established in 1866; and the other in Prospect Park, Brooklyn, established in 1878.

[2] The Chicago Zoölogical Park is now in process of development. The estimated ultimate cost of buildings and landscape work is approximately $4,000,000. The plan contemplates an ultimate collection of five thousand specimens. The Lincoln Park Commissioners maintain an excellent zoo and aquarium in Lincoln Park.

[3] The new zoölogical park in Detroit is now in process of development. The plans contemplate one of the largest zoos in the United States. A small zoo is maintained in Belle Isle Park by the department of parks and boulevards, also an excellent aquarium.

[4] A report late in 1925 gives over eleven hundred specimens. The zoo occupies a portion of Washington Park.

[5] There is also a small zoo maintained in City Park, New Orleans. The listed zoo is located in Audubon Park. An excellent aquarium is also maintained in Audubon Park.

[6] 1924.

City	Year Established	Acres Site	Number Mammals	Number Birds	Number Reptiles	Total Specimens
Toledo	1900	31.4	500	....	25	525
Providence, R. I.	1891	....	35	200	28	263
St. Paul, Minn.	1895	30	29	No data	....	....
Atlanta	1892	....	101	41	15	157
Oakland	1922	1	33	152	....	185
Omaha	1912	10	300	30	....	330
Birmingham	1909	5	81	52	10	143
Syracuse	1886	25	67	195	13	275
Memphis	1905	....	....	....	....	....
San Antonio	1910	6	....	....	....	140
Dallas	1912	36	261	750	42	1,053
Houston	1914	30	....	....	....	....
Springfield, Mass.	1885	50	210	289	....	499
Salt Lake City, Utah	1911	6	118	300	5	423
Norfolk, Va.	1901	10	123	65	33	221
Fort Worth, Texas	1910	20	200	190	15	405
Spokane, Wash.	1905	10	....	....	....	250
Tacoma, Wash.	1903	30	75	50	....	125
Waterbury, Conn.	1910	....	44	21	1	66
Oklahoma City, Okla.	1923	50	50	100	6	156
Canton, Ohio	....	16	29	57	6	93
El Paso, Texas	1919	7	80	150	....	223
San Diego, Calif.	1922	115	....	....	....	1,200
Wichita, Kan.	1905	10	35	60	5	100
Sioux City, Iowa	1915	....	94	43	1	138
Sacramento, Calif.	1915	3	50	20	....	70
Racine, Wis.	1925	27	39	100	....	139
Davenport, Iowa	1904	....	29	12	....	41
Cedar Rapids, Iowa	1898	30	....	....	....	114
Fresno, Calif.	1913	9	32	....	....	....
Pueblo, Col. (three small zoos)	1907	32	46	22	....	68
Kenosha, Wis.	....	5	9	50	....	59
Stockton, Calif.	....	5	25	50	....	75
Springfield, Mo. (two small zoos)	....	1 4	40	60	....	100
Council Bluffs, Iowa	....	20	14	24	3	41
Joplin, Mo.	1920	10	22	1	....	23
Lafayette, Ind.	....	....	103	217	6	326

The Planning of a Zoölogical Park

Selection of a Site.

The great majority of the zoölogical gardens in the United States are located in medium-sized or large parks. A few are situated in areas devoted specifically to zoölogical garden purposes as in New York, Cincinnati, Dallas and the new zoos in Chicago and Detroit. There appears to be a tendency among park officials and directors of zoos to favor the use of a separate and independent unit of the park system for the zoölogical garden rather than to locate it in a large park devoted to many other uses. From the viewpoint of the design of a large park the exclusion of such a feature as a zoo is no doubt desirable for the reason that the design of an area

devoted to a zoo must necessarily be more or less formal, hence introducing an element foreign to the general design of the park, notwithstanding the modern attempts to develop zoos along naturalistic lines. Moreover, the educational-recreational value of a zoo will more likely be realized to a higher degree if the minds and interests of the people are not divided by other interesting features, as is the case in most large parks having zoos located in them. However, in the case of small collections of animals the viewing and studying of which would not consume the entire time that visitors have to spend in a large park at any one time, and where the arrangement would not require any special designing of the area, the introduction of the zoo feature might not be undesirable. In very large parks of several hundreds of acres no great injury to the general character of the whole park can be done by setting aside sufficient space even for a large collection of animals.

Whether the zoo is located in a separate unit or in an area of a large park the site selected should present as varied a topography as possible, should be far enough removed from the center of population and from industrial and commercial activities to ensure plenty of fresh air and sunshine and yet be easily accessible to the people by good motor roads and electric railway lines.

Size of the Site.

From the table on pages 904–905 it may be seen that the sizes of areas devoted to zoölogical gardens ranges from a very few acres to over two hundred and fifty acres. The necessary size of the area will, of course, vary with the types and number of specimens and with the conception of the design. If the design be projected on the plan of a menagerie a great many specimens can be exhibited on a comparatively small area. If the design is to be naturalistic, if a number of varieties of grazing animals are kept and it is desired to develop as nearly as possible the natural habitat of specimens of all kinds, much more extensive space will be necessary. Areas which permit of naturalistic treatment are decidedly favored by practically all park and zoo officials in this country.

It would appear, therefore, that very large zoos planned on naturalistic lines should have from one hundred to two hundred and fifty acres, medium-sized zoos from fifty to one hundred acres and smaller zoos from twenty to fifty acres. Very small zoos may be developed on from five to twenty acres. It is interesting to note, however, that the Philadelphia zoo, one of the largest zoos in this country, occupies only forty acres. This manner of concentration of specimens is chiefly of advantage to the visitor who is thus enabled to view the specimens without long walks.

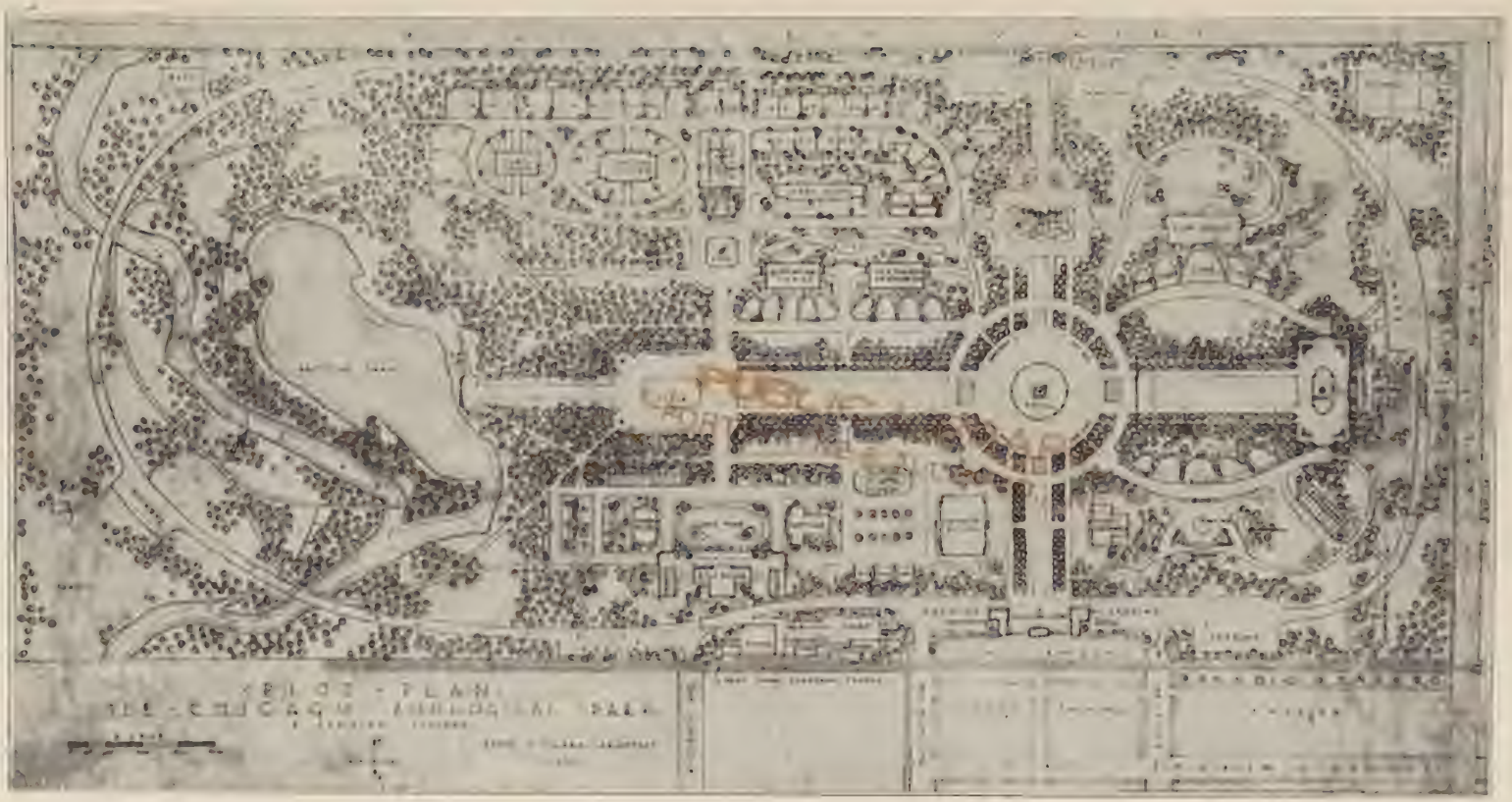

PLATE NO. 358. PLAN OF THE CHICAGO ZOÖLOGICAL PARK IN FOREST PARK, CHICAGO

The total cost of the buildings and landscape work is estimated at $4,000,000. The scheme contemplates space for an ultimate collection of 5,000 specimens with the usual variety of houses, flying cages, etc., and with barless dens for bears, cats, wolves and hyenas, a monkey island, a goat hill, three sea lion pools and possibly some rock backgrounds for some of the hoofed animals. The area of the total property is 196 acres. The zoo proper will occupy about 100 acres. The remainder of the property will be used for a small farm, paddocks for animals not on exhibit and other purposes which may arise.

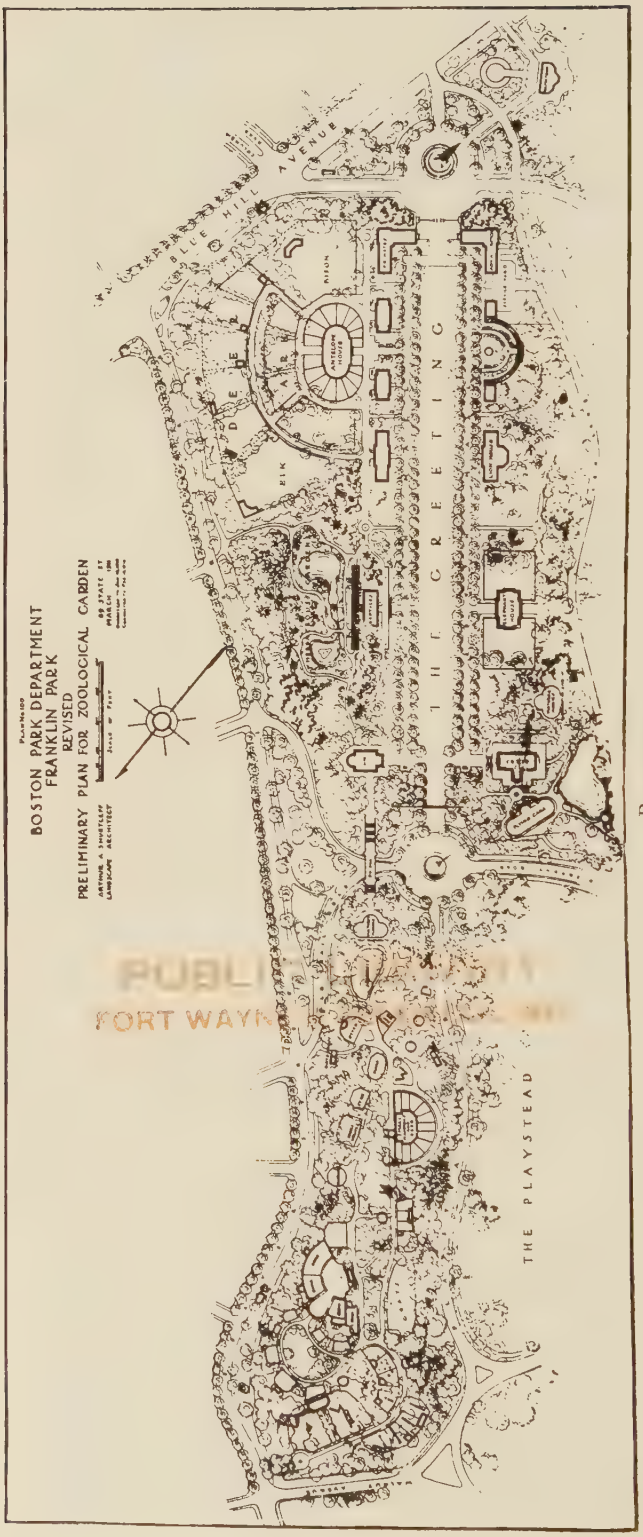
BOSTON PARK DEPARTMENT
FRANKLIN PARK
REVISED
PRELIMINARY PLAN FOR ZOOLOGICAL GARDEN
BLUE HILL AVENUE
THE GREETING
THE PLAYSTEAD
PUBLIC
FORT WAYN

PLATE 359

The Design or Plan.

In making the design or plan the topography of the proposed location should be carefully studied, and the enclosures, buildings, etc., arranged in a manner that will best harmonize with the surroundings and preserve the natural advantages, such as shade, protection from the elements, and the natural hills and rocks best fitted for specimens whose natural habitat is the mountainous sections of the country. Natural ponds and streams should all be utilized and kept in their wild state as far as practicable. The ideal location for any captive animal is one that represents as nearly as possible the conditions with which it was surrounded in nature. The enclosures should be large enough so that the aspect of close confinement is to a certain extent lost, yet small enough for the visitor to view the specimens at close range. Much of the educational value and pleasure to the visitor is lost if the enclosures are so large as to permit the animals to keep at a distance which makes close inspection impossible. Such an arrangement may be artistic, but the visitors come to the zoo to see the animals, and the closer they can get to them, the more interesting the specimens become.

A definite plan should be decided upon and a permanent drawing made showing the natural features, walks, driveways, plantations, locations of buildings and enclosures, and this plan should not only be projected on the basis of present needs but for future growth as well (Plates 358, 359 and 360). Because of the tendency toward naturalistic designs for zoölogical gardens in this country these designs have been and are being made by landscape architects. It cannot be too strongly emphasized, however, that the plans of a landscape architect should be carefully scrutinized by one or more persons thoroughly conversant with the needs of animals in captivity and with the practical management of zoos. In any city where an old zoo is being reconstructed the director in charge may be able to provide this expert knowledge. In any community contemplating the establishment of a zoo for the first time it is highly desirable that the most capable director available be employed before the final plans have been adopted. In either case the director should be permitted to visit and study the most outstanding zoos in this country and abroad before passing judgment upon the final plan, for many costly mistakes may be avoided through a first-hand knowledge of the practical experiences of successful zoos.

The general plan of a zoo necessarily involves several distinct features. Among these are:

1. *The landscape plan.* The landscape plan comprises paths, walks, service driveways, parking spaces, preservation and development of natural topographical features or the creation of special topographical features,

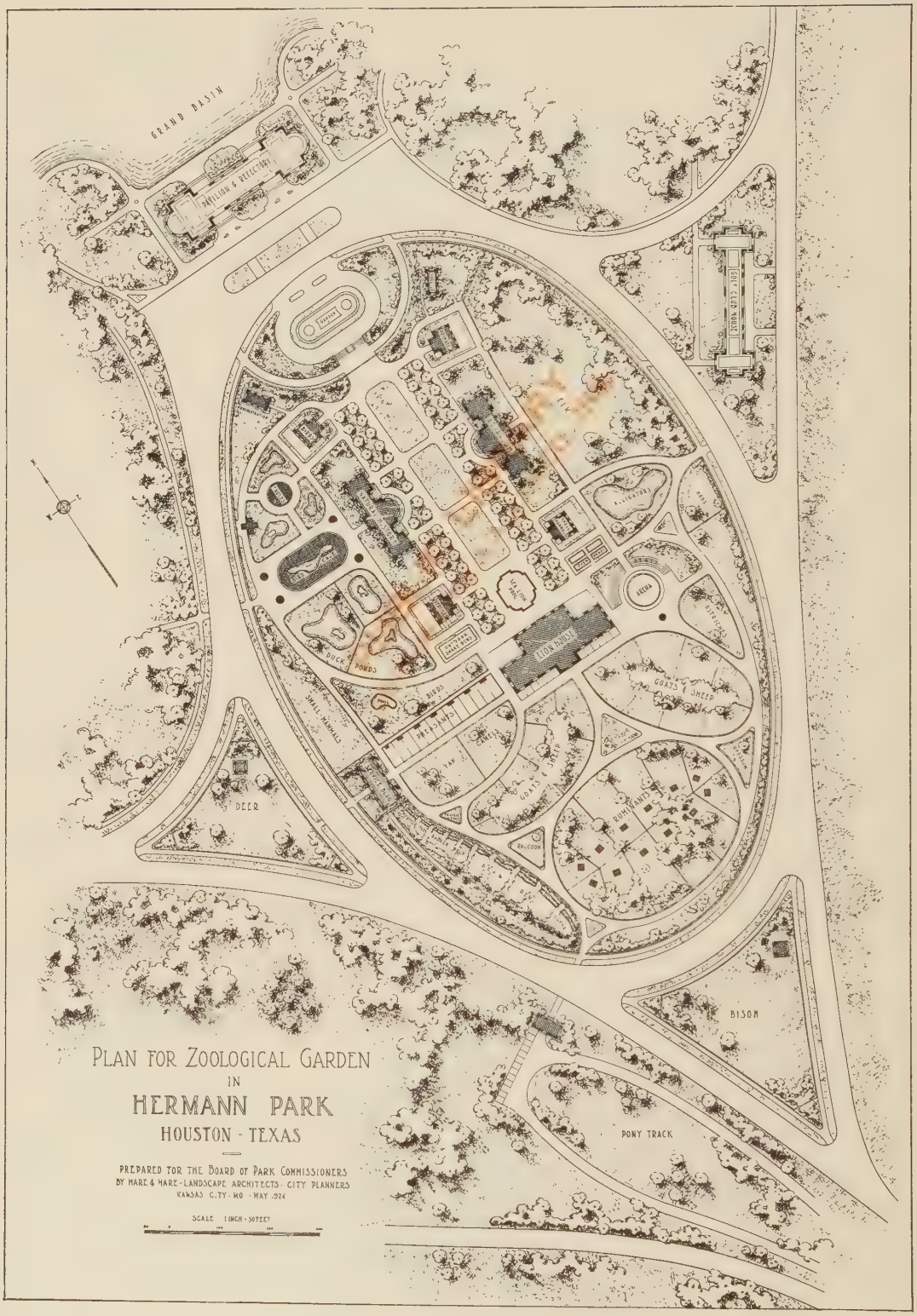
GRAND BASIN
PAVILION & REFECTORY
GOLF CLUB HOUSE
ELK
LION HOUSE
ARENA
SEALION POOL
ROCK PONDS
BIRDS
PRIMATES
SMALL MAMMALS
GOATS & SHEEP
RUMINANTS
RACCOON
DEER
BISON
PONY TRACK
PLAN FOR ZOOLOGICAL GARDEN
IN
HERMANN PARK
HOUSTON - TEXAS
PREPARED FOR THE BOARD OF PARK COMMISSIONERS
BY HARE & HARE - LANDSCAPE ARCHITECTS - CITY PLANNERS
KANSAS C.TY - MO - MAY 1924
SCALE 1 INCH = 50 FEET

PLATE 360

planting plans and the location of structures and enclosures. The manner of approach to this important and fundamental phase of the general plan has been touched on in the first paragraph of this section.

2. *Design and construction of structures and enclosures for the confinement, care and exhibiting of specimens.* At this stage of development of the general plan no single step should be taken by a landscape architect, park official and building architect without the constant advice of an experienced zoo director who is thoroughly familiar with the life needs of the various types of specimens to be kept and exhibited and who knows how to combine healthful living conditions for the specimens with good exhibit arrangements. The mistakes made by park officials in attempting to start and maintain a collection of wild animals in poorly designed and unhygienic buildings, cages and enclosures, are legion. Such attempts always result in a high mortality among the specimens, waste of funds and much criticism from the public. Under no conditions should a park department undertake the development of a zoo until there are ample funds in hand to ensure the construction of equipment designed in every particular to provide the best possible sanitary living quarters for the specimens. Of equal importance, also, is the absolute necessity of having sufficient financial resources for properly caring for the specimens after they have been adequately housed.

Although it is desirable to have the general plan formulated, it is wiser in most instances for park departments to proceed slowly with the development of a zoo in so far as structures are concerned. A beginning might be made with structures for specimens native to the region or that come from countries presenting somewhat similar climatic conditions to the

Plate No. 361. THE OLD BEAR PITS, PHILADELPHIA ZOÖLOGICAL GARDEN, FAIRMOUNT PARK, PHILADELPHIA.
Constructed in 1875.

region in which the particular community is located. One of the first exhibits of wild animals installed in many zoölogical parks, particularly where funds are limited, is the bears. These animals are, as a rule, easily secured, live well in captivity and are always interesting to the public. Cages or dens can be constructed at a nominal cost and no houses are needed. Plate 361 shows the old bear pits in the Philadelphia Zoo which were constructed as long ago as 1875 at a cost of $1,500 and which are still in use. The bears live wonderfully well in them and are readily seen by the public at close range. While there have been other bear cages of a more modern type erected in this zoo, these old pits with their climbing trees seem to be as much of an attraction as when they were first installed. Plate 362 shows the modern, up-to-date bear exhibits in the St. Louis Zoo. These artistic and efficient enclosures, containing five units, were erected at the great cost of $235,000 and were constructed at a time when the cost of labor was about thirty-five per cent less than at the present time.

Most of the modern zoölogical gardens are being built on the plan of the "barless zoo," that is, the enclosures that are to contain the large mammals are, so far as possible, built with wide moats or ditches surrounding them. This enables the visitor to view the animals without the intervening fences. This type of enclosure is rather more expensive and requires more space. It is doubtful whether this barless method adds anything to the life of the animal or to the visitor's enjoyment, and they are certainly much more difficult to keep clean. From the artistic standpoint, however, there is no comparison. The moated cliffs are beautiful, and to stand off at a distance and watch the animals moving about in this seeming replica

PLATE NO. 362. BEAR EXHIBIT IN ST. LOUIS ZOO

of their natural haunts gives a very pleasing and picturesque effect. Unless, however, there are plenty of funds for the construction and maintenance of these expensive structures, the old type of cage is preferable, for it is safe for animals and visitor, gives a good view of the specimens and may easily be kept clean.

Almost all wild animals and birds can remain out of doors at all seasons in the warmer parts of the United States. There are many species, however, that can remain out of doors in the colder parts of the country throughout the entire year. For example, in a climate like that of the Middle Atlantic States, the bears, several kinds of deer, some monkeys, camels, wild horses, llamas, buffalo, yak, many of the sheep and goat family, porcupines, raccoon, wolves, foxes and others, remain out through the coldest weather without injury. It is therefore possible to start and maintain a zoölogical park on a smaller and less expensive scale by beginning with such animals as these, and with birds that will live out during the colder

PLATE NO. 363
SHOWING PLAN OF SEPARATING CAGES

months, such as many species of ducks, geese, swans, pheasants, hawks, vultures and owls. Specimens of this kind, properly caged in efficient but less expensive enclosures, and with some warm shelters, well cared for and carefully fed, would form an excellent and instructive exhibit which would go far toward creating an interest in wild animals, bringing gratifying results. Too much emphasis cannot be placed on the fact that this should not be done in a haphazard way. Cages must be arranged according to the original plan and not set up promiscuously or temporarily. They need not be expensive or elaborate, the main feature being the comfort and safety of the animals and the protection of the visitors. A zoo of this kind has no expense for heating or maintenance of large buildings, which is a very large item. As the community grows, or if ample funds become available for zoo purposes, such buildings as a bird house, small mammal, antelope, elephant and lion houses can be added from time to time.

The inside of the buildings and cages should be so planned that they are practical and can easily be kept clean and sanitary. This is of para-

PLATE No. 364. FENCE CONSTRUCTION

Showing a type of fence constructed of No. 6 gauge wire, two-inch mesh, with four-inch O. D. galvanized corner posts, and two and one-half-inch O. D. galvanized pipe for side posts.

mount importance. There should be no corners, mouldings or places of any kind where dirt may collect, or that cannot be easily cleaned. It is advisable to have each cage, where possible, especially in the case of monkeys, small mammals and similar specimens, entirely separated from the next, so that any disease that might develop in one will not be transferred to the other. Solid partitions between the cages of this type are recommended, or cages arranged to set at least two feet apart, as shown in Plate 363. The outside of the building should really be of secondary consideration, and should be of plain and dignified construction.

Outside cages and runways must be built in such a way that animals cannot reach through to injure their neighbors or to catch themselves. It is, therefore, advisable to use some good wire fencing, preferably such as is made by the standard fence manufacturing companies. Great care must be taken in the purchasing and erection of these fences, to see that both top and bottom wires are knuckled, leaving no sharp or pointed wires anywhere inside the cages. Plate 364 illustrates a very good type of fence. This fencing of No. 6 gauge wire, two-inch mesh, with four-inch O. D. galvanized pipe for corner posts, and two and one-half-inch O. D. of the same pipe for sides will hold almost any animal. Plate 365 shows the same kind of fence but of a smaller gauge wire, used in this case to form enclosures for

PLATE No. 365. FENCE CONSTRUCTION

Illustrating same type of fence as shown in Plate 364, but constructed of smaller gauge wire.

wolves. The cement work between the cages is twelve inches high and the partitions are of one-half-inch mesh to prevent the animals from catching each other. The small shelters in the rear open at the back and top, allowing the keeper to scrub them thoroughly daily and also to allow the sun to shine into them. Each cage contains a pool of running water and a movable platform about three inches above the cement floor, and large enough for the animal to lie on. A guard fence or wire and proper warning signs are always desirable around all animal enclosures, for in building a zoo the visitors must be assured of every precaution for their protection. Everything must be as near fool proof as possible, because there are many irresponsible persons who will attempt the most absurd things.

It is impossible, of course, to go into detail as to each type of building or enclosure in this short chapter. It is difficult to state which type of building is the most desirable to erect first, but it is perhaps true that the building most popular with the general public is the monkey house. People will stand for hours in front of the monkey cages watching their very human manners and funny antics. This is especially true of the chimpanzees and orang-utans. All monkeys, but especially the anthropoid apes, are very sus-

PLATE No. 366. MONKEY HOUSE, PHILADELPHIA ZOÖLOGICAL GARDEN

Illustrating the manner of construction of the interior of the monkey house, Philadelphia Zoölogical Garden.

ceptible to the illnesses of humans, especially the diseases of the respiratory tract. It is therefore desirable that these animals be kept behind glass, if possible, to avoid contact with visitors suffering from colds or like conditions, and also to prevent feeding by the public. A view of the interior of the monkey house at the Philadelphia Zoo as shown in Plate 366 illustrates this method of protection. Another feature of the greatest importance in the construction of monkey houses, so far as the welfare of the animals is concerned, is the outside enclosures as shown in Plate 367. These outside cages are available to the animals at all times and are controlled by swinging doors which are operated by the animals themselves, so that they may go in or out at will.

3. *Service structures.* Service structures are of two types, (1) those structures used by the management in the conduct of the zoo; (2) those structures provided for the comfort and convenience of the visiting public. The first group comprises such structures as gate house or houses at those zoos surrounded by a fence and to which an admission fee is charged, administration building, kitchen for the preparation of food for those ani-

PLATE NO. 367

OUTSIDE ENCLOSURES FOR MONKEYS, PHILADELPHIA ZOÖLOGICAL GARDEN

mals needing specially prepared food, storage places, shop, stable, etc. The water and sewer system may be included in this group of facilities. In most zoos, the administrative office, kitchens and storage facilities may be located in structures primarily used for the confinement and exhibit of specimens. The second group of structures comprises comfort stations, waiting stations at the termini of railway or bus lines, shelter houses, refreshment stands and refectory. In a very few zoos various facilities are provided for the recreation of the people, such as a dance hall, outdoor theatre, indoor theatre, carrousel and pony paddock and track. A very important feature of the plan of modern zoos is adequate parking space.

The Administration of Zoölogical Parks

Public zoölogical parks in the United States are administered by three different types of agencies—by private societies, by special municipal administrative bodies and by park departments.

The private zoölogical societies are as a rule incorporated under the laws of the state in which they operate and are thus given the standing of quasi-public agencies, thereby enabling municipalities legally to turn over to them the administration of publicly owned areas and facilities, and to control the expenditure of public appropriations for zoo purposes. Where this method of administration prevails the park departments or municipal governments exercise no authority over the actual administration, although there may be a representative of the park or municipal governing authority on the board of directors. There are a few examples, as in Milwaukee and St. Louis, of zoölogical societies which act only in a coöperating capacity with municipal authorities and without any direct administrative authority.

Zoos in a Number of Cities.

The New York Zoölogical Park (Bronx Park) is under the administrative control of the New York Zoölogical Society, a scientific body incorporated in 1895 under a special charter granted by the State of New York. The objects of the society are: "to establish a public zoölogical park; to preserve our native wild animals; and to promote the science of zoölogy." The membership of the society, which numbered in 1925, two thousand, two hundred members, is divided into the following classes: annual, $10; life, $200; patron, $1,000; associate founder, $2,500; founder, $5,000; founder in perpetuity, $10,000; benefactor, $25,000.

A board of managers comprising thirty-six persons elected by the membership has charge of the affairs of the society. This board meets three times a year. An executive committee of eight members, chosen by the board of managers, has active charge of the planning and general development of the work of the society. The general executive officers of the

society consist of the director of the zoölogical park, the assistant director, director of the aquarium, prosector and bursar. (For a list of the principal executive officers of the zoölogical park, see section on Personnel, page 923.)

The Philadelphia Zoölogical Society, which administers the Philadelphia Zoölogical Garden located in Fairmount Park, was incorporated in 1859, being, perhaps, the oldest of such societies in this country. It established the zoölogical garden in 1876. The general affairs of the society are controlled by a board of directors consisting of eighteen prominent citizens. An executive committee has immediate charge of the management of the garden.

The Cincinnati Zoölogical Garden, the oldest of the most notable zoölogical gardens in the United States, was administered, when first opened in 1875, by a board of directors of a stock company which had been formed for the purpose of establishing and maintaining the garden. After a number of years of successful development and operation of the garden the financial affairs of the company became so involved that it passed into a receiver's hands. As a result of the efforts of the receivers "to save the zoo" a large amount of money was privately subscribed with which the debts of the garden were liquidated and a new organization formed in 1899 known as the Cincinnati Zoölogical Company. The garden continued under the management of the new company until 1902 when the Cincinnati Traction Company purchased all the stock of the Zoölogical Company. The management of the garden continued under the Traction Company officials until 1916, when it was purchased through private subscription and came under the management of a new private organization known as the Cincinnati Zoölogical Park Association, which continues to operate it to this date (1925).

In San Diego a zoölogical society was organized in 1916 to take over the group of animals which had been on exhibit at the Panama-California Exposition. The society assumed entire support of this collection until 1922, when the new zoölogical garden was constructed with the aid of public unds. The administration of the garden, located in Balboa Park, continued under the society, although the major financial support for operation and maintenance comes from public appropriations. The aims and purposes of the San Diego Zoölogical Society are as follows: (*a*) The exhibition of wild animals, birds and reptiles for educational purposes. (*b*) The instruction of the public, especially children, in regard to the habits, habitats and usefulness of wild animals, birds and reptiles, distinguishing between those that are harmful and those that are beneficial to mankind. (*c*) The conservation of American wild life, in order that such animals as the bison, the antelope, the mountain sheep, the elk, and the great American eagle

may not become entirely extinct, as has been the case with so many species that have been completely destroyed. (*d*) The study of disease in wild animals and birds, with special reference to the relation existing between these and the diseases to which domestic animals and even mankind are subject. (*e*) The entertainment of our home people and of the thousands of visitors from other cities and other states, who seek in San Diego pleasant ways in which to pass their leisure hours.

By an act of Congress in 1890 the National Zoölogical Park at Washington, D. C., was placed under the administrative control of the Smithsonian Institution, a private corporation, although very closely allied to the Federal Government. This act authorized the institution to administer the park "for the advancement of science and the instruction and recreation of the people."

The foregoing examples, together with the new zoölogical park at Chicago and the new park at Detroit, are the principal illustrations of the management of public zoölogical gardens or parks by private agencies. Some of the advantages of the private administration of zoölogical parks may be summarized as follows: (*a*) It ensures the continuous interest and support of an organized group of citizens definitely interested in the aims and purposes of a zoölogical park. (*b*) Usually the membership selects prominent and able citizens as officers and members of the board of directors, which ensures capable leadership in the general administration of the zoo. (*c*) The officers, members of the board of directors, and the members of the society in general are keenly alive to the fundamental value of trained workers, especially in the major executive positions. (*d*) Both the selection and retention of employees will likely be based entirely upon merit. These societies are notably free from political practices. (*e*) Funds, whether from private or public sources, will likely be administered without the wasteful practices sometimes present in political management. Moreover, an organized group of citizens, such as compose these societies, are more likely to secure adequate funds from both private and public sources than would be the case where the zoo is only a division of a park department. (*f*) The private organization will generally give a great deal of attention to development of the educational and recreational possibilities of the zoo, because its interest is not divided as is the case where the zoo is under the direct management of commissioner of parks or of a park board. The fact that so many of the outstanding zoos of the United States are under the management of incorporated private societies is the best possible testimony of the effectiveness of this type of management.

The Zoölogical Society of St. Louis was formed in 1910 and incorporated in 1914. Its objects are stated as follows: (*a*) To establish, maintain

and control, and to coöperate with the City of St. Louis in establishing, maintaining and controlling suitable zoölogical parks, gardens, collections and exhibits for the promotion of zoölogy and kindred subjects, and for the instruction and recreation of the people, and particularly of the children of St. Louis. (*b*) To exhibit wild animals under favorable conditions. (*c*) To encourage and publish the results of zoölogical research. (*d*) To increase public interest in wild animals. (*e*) To secure better protection of wild animal life by educational methods.

While the administration of the St. Louis Zoölogical Park is not under the control of the society, it was the active agent in the original promotional work which made the park possible. In 1915 at the instance of the society the State Legislature of Missouri passed a law enabling the people of St. Louis to vote upon the levying of a one-fifth-of-a-mill tax for building and maintaining the Zoölogical Park of St. Louis. This law was favorably voted upon by the people in 1916. Previous to this date (1913) the city government by appropriate legislation set aside approximately seventy-two acres in Forest Park and created a board of control for the administration of the zoo. This board of control, originally appointed by the mayor, consists of five city officials and four selected citizens. The city officials comprise the commissioner of parks and recreation, city comptroller, mayor of the city, president of the board of public service, and the vice-president of the board of aldermen. Aside from the ex officio members the board now elects its own members. Up to the present time the citizen membership has always been chosen from the membership of the zoölogical society. The superintendent of the zoölogical park, who also acts as secretary of the board of control, and the architect and superintendent of construction are ex officio members of the board. St. Louis presents the only example in the United States of a special municipal or public managing authority of a zoo. A very distinguishing feature of the plan of management is the close coöperative relationship existing between the Board of Control and the Zoölogical Society of St. Louis.

Another example of close coöperative relationship between a public managing authority and a strong zoölogical society is to be found in Milwaukee. The Washington Park Zoo, one of the notable zoos in the United States, is almost wholly financed by the park department and is under its direct management. The Washington Park Zoölogical Society is an organization of citizens (586 in 1924) with the following objectives: (*a*) To enlarge the Milwaukee Zoo. (*b*) To exhibit animals under favorable conditions. (*c*) To foster and encourage zoölogical research. (*d*) To increase public interest and public knowledge in wild animals. (*e*) To secure better protection of animal life by educational methods. (*f*) To attract people from out of town to visit Milwaukee.

This society was charted by the state in 1910. The membership is divided into three classes: Annual, $5; honorary, $100; life, $250. The affairs of the society are handled by a board of directors composed of twenty members which include the six officers. The secretary-manager of the park department is the secretary of the society and a member of the board of directors. The director of the zoo is also a member of the board of directors. The membership of the board of directors is divided into the following standing committees: Finance, membership, entertainment, emergency, purchase and conference, publicity, printing and auditing. Regular monthly meetings are held by the board of directors.

By far the larger majority of the collections of wild animals on exhibit in the public parks in the United States are under the direct administrative control of the park authorities. Up to the present time it cannot be said, in general, that the administration of zoölogical parks directly by public park authorities has been eminently successful. There are a few exceptions and these exceptions are largely due to the fact that the park authorities have had the wisdom to secure capable directors, give them fairly ample funds and then leave them free to handle the administrative details. In the majority of instances the duties and responsibilities of park authorities have been so varied and their financial resources so inadequate with all kinds of public demands calling for the expenditure of the finances that a single feature like the zoo often is neglected, both financially and administratively. Moreover many park authorities fail to understand the absolute necessity of utilizing expert knowledge both in the planning and construction and in the management of zoos. Wherever politics enters into the administration of a zoo the result is sure to be disastrous.

Any public agency attempting to develop and manage a zoo is likely to find a local zoölogical society very helpful in dealing with the problem, and where no such society exists might well take the initiative in forming one.

The Director and Staff.

While adequate finances, proper equipment and a sympathetic, working general administrative authority are fundamentally important factors in the successful conduct of a zoo, the key to the continuous successful operation is to be found in the executive head or the director. Too much care cannot be exercised by the general administrative authority in selecting this official. The director should be, as far as possible, a man who has a natural love for animals and who has had more or less experience in the field and in the care of wild animals. He must also have executive ability, a general knowledge of natural history and a lot of common sense, as problems are arising daily, each different from the rest, and many requiring quick and true judgment.

There should be a head keeper, a man who is in no way afraid of animals, but who is gentle and firm in his method of handling them. Many animals are killed or injured by improper handling. An inefficient head keeper is expensive at any price. In a small zoo the director may be able to act also as head keeper. It is difficult to state just how many keepers are required to care properly for a collection of wild animals, but enough men must be available to feed and care for them and keep them in a clean and sanitary condition. Examples of the personnel list of several different zoos will be given at the close of this section.

There are, of course, many instances where medical treatment of animals is necessary. In cases of hoofed animals, cats, wolves, etc., a practical veterinarian should be employed, while for the Primates a medical doctor will be required, since animals of this order are more closely allied to human beings and the treatment of their diseases almost identical.

It cannot be too strongly emphasized that a competent director should be given the authority to employ and discharge his assistants, and that in the details of the management he should be interfered with as little as possible by the general administrative authority.

Executive and Maintenance Personnel.

The following are a few examples of the number and type of employees in various zoos in the United States. In some instances the rate of pay is given. By reference to the table, pages 904–905, the size of the zoo can be ascertained, which is more or less necessary to an interpretation of the personnel lists.

1. New York Zoölogical Park.
   - Director.
   - Assistant director.
   - Chief clerk and disbursing officer.
   - Curator of reptiles, assistant curator of mammals.
   - Curator of birds.
   - Chief forester and constructor.
   - Cashier.
   - Photographer and editor.

2. St. Louis, Missouri.

	Rate of Pay
1 Secretary and superintendent	$4,500.00
1 Chief clerk	
1 Stenographer clerk	1,020.00
1 Foreman animal keeper	2,040.00
1 Assistant foreman animal keeper	1,740.00
13 Animal keepers	1,440.00–1,680.00
3 Janitors	960.00–1,200.00
3 Firemen	1,200.00
1 Police sergeant	1,500.00
3 Park police	1,380.00
1 Manager refreshment stands	1,920.00
1 Foreman	$1,800.00
1 Draughtsman	3,600.00
1 Construction foreman	1,980.00
1 Foreman	1,780.00
4 Construction laborers, per hour	.67½
1 Driver	1,440.00
39 Laborers, per day	3.50–4.40
6 Teams, per day	8.00

This personnel was compiled at a time when there was a considerable amount of construction work being done.

3. Pittsburgh, Pennsylvania.

	Rate of Pay
1 Head keeper, per month	$169.50
6 Animal keepers, per day	4.25
1 Engineer, per day	8.00
1 Engine room laborer, per day	4.50
5 Laborers, per day	4.00
1 Watchman, per day	4.00

4. Buffalo, New York.
   - 1 Director.
   - 5 Animal keepers.
   - 2 Night watchmen.
   - 4 Laborers.

	Rate of Pay
5. Kansas City, Missouri.	
1 Superintendent.	
1 Assistant superintendent.	
8 Attendants.	
6. Dallas, Texas.	
1 Head zoo keeper, per month	$150.00
1 Assistant, per month	100.00
3 Assistants, per day	3.20
7. San Diego, California.	
1 Director.	
1 Clerk.	
1 Cashier.	
1 Storekeeper.	
1 Foreman.	
1 Carpenter.	
1 Laborer.	
1 Truckman.	
6 Animal keepers.	
8. New Orleans, Louisiana (Audubon Park).	
1 Superintendent	$1,200.00
1 Bird curator	1,500.00
1 Aquarist	1,500.00
1 Attendant, per month	75.00
1 Keeper, per month (with house)	90.00
9. Cincinnati, Ohio.	
1 General manager.	
1 Assistant manager.	
1 Business manager and secretary.	
11 Animal keepers.	
1 Gardener.	
1 Pony track man.	
1 Driver.	
1 Carpenter.	
1 Electrician, part time.	
2 Night watchmen.	
14 Laborers.	
5 to 6 men to look after parking of automobiles in summer.	
110 Employees in club and refreshment service.	
10. Seattle, Washington.	
1 Superintendent.	
4 Keepers.	
2 Assistants.	
11. Denver, Colorado.	
1 Superintendent.	
3 Keepers.	

Financing Zoölogical Parks

Three different methods have been and are now being used to finance the construction and operation and maintenance of zoos in the United States. They are as follows:

1. Wholly by Public Funds.

These funds may come from annual appropriations or by a special millage tax. The majority of the zoos are financed by annual appropriations, such appropriations usually being part of the budgets of park departments. The National Zoölogical Park in Washington is financed through congressional appropriations, administered by the Smithsonian Institution. It is true, of course, that zoos financed entirely by public appropriations frequently receive gifts of animals. There are a few examples where zoos have a special millage tax for construction, operation and maintenance. In St. Louis this tax is two cents on every one hundred dollars valuation on all taxable property. The income under this plan amounted the first year to approximately $170,000 and has increased to approximately $245,000 annually. The special tax for the new zoo in Detroit is one-tenth of one mill on each dollar of valuation. Under this tax the budget allowance for 1925–1926 was $270,532.77. The requested budget allowance for 1926–1927 was $296,766.40. In 1923 the State Legislature of Illinois enacted a law providing for the establishment of zoos in country preserve districts having a population of two hundred thousand or more. This law provides: "For the purpose of constructing and maintaining and caring for any such

zoölogical park and the buildings and grounds thereof and of securing and displaying zoölogical collections therein the corporate authorities of any forest preserve district containing a population of two hundred thousand or more are hereby authorized to levy annually a tax on all taxable property in such district as assessed for the purpose of country taxation, of not to exceed three-tenths of one mill on the dollar for a period ending December 31, 1928, and of not to exceed one-tenth of one mill on the dollar thereafter." — Illinois Revised Statutes, Cahill, 1925, Chapter 57a, Section 19. In Milwaukee one-tenth of a mill on each dollar of valuation is devoted to the maintenance and development of the zoo, but practically all specimens have been secured through donations, chiefly through the efforts of the Washington Park Zoölogical Society.

2. Public and Private Funds Combined.

New York, Philadelphia and San Diego are examples of zoos financed by both public and private funds, but there is a great difference among these cities as to the relative importance of the two sources of income. In Philadelphia the yearly operation and maintenance cost is approximately $200,000. Of this amount only $50,000 comes from public appropriation, and it is stipulated by the city that inmates of all charitable institutions must be admitted free, and that two hundred thousand tickets be given to the board of education for the free admission of school children. The remainder of the annual cost comes from admission fees ($100,000 to $125,000, yearly), membership dues in the zoölogical society and receipts from concessions.

The New York Zoölogical Park has the following sources of income:

Private. Subscriptions from citizens, annual dues and fees from members. In addition, the City of New York permits the society to retain and expend all income from revenue-producing privileges and admission fees. This income is used for the purchase of animals for the park. Up to 1924 the zoölogical society has expended of its own funds for plans, construction and live animals, over $641,000. The society has an endowment fund of approximately $2,400,000.

Public. Appropriations from the City of New York for the construction of walks, roads, sewers and drainage, water supply, public comfort stations, entrances, grading, excavating of large ponds and lakes, annual maintenance and also for animal buildings. For a period of five years (1921–1925) the average annual appropriation by the city for the zoölogical park has been approximately $249,475. This is budgeted through the Bronx Park Department.

In San Diego the zoölogical society provides guides and $5,000 yearly

toward the operation and maintenance of the zoo. The total expenditure as reported in 1925 was $55,500, of which $20,500 was for permanent improvements. Milwaukee, Sacramento and Dallas report receiving some aid from private funds.

3. Entirely from Private Sources.

The Cincinnati Zoölogical Garden is the only example of a great public zoo in this country that is financed entirely from private subscription, admission fees and income from revenue-producing facilities. At no time in its long history has it had the benefit of public funds.

Some idea of the finances of zoos in a few other cities is given in the following table (Statistics as of 1925).

City	*Expense*	*Outlay*	*Total*	*Value of Buildings*	*Value of Collections*
Washington, D. C.	$148,537.00	$3,250.00	.....	.....	.....
Pittsburgh, Pa.	50,569.00	.....	$50,569.00	$100,000.00	$75,000.00
San Francisco, Calif.	13,592.52	.....	13,592.52	5,000.00	15,000.00
Milwaukee, Wis.	54,131.20	19,721.84	73,853.04	262,821.21	54,936.00
Kansas City, Mo.	30,000.00	.....	30,000.00	.....	.....
Seattle, Wash.	6,128.77	963.79	7,092.56	50,000.00	.....
Portland, Ore.	7,500.00	.....	7,500.00	50,000.00	25,000.00
Denver, Colo.	18,000.00	2,000.00	20,000.00	150,000.00	11,568.00
Toledo, Ohio	15,000.00	.....	15,000.00	.....	.....
Oakland, Calif.	5,725.79	.....	5,725.79	.....	.....
Omaha, Neb.	5,000.00	.....	5,000.00	.....	.....
Birmingham, Ala.	6,375.49	.....	6,375.49	.....	4,379.00
Syracuse, N. Y.	5,259.00	.....	5,259.00	8,800.00	3,379.00
New Haven, Conn.	21,962.37	.....	21,962.37	.....	.....
Dallas, Texas	13,500.00[1]	.....	13,500.00	42,085.47	27,000.00[2]
Fort Worth, Texas	7,910.68	.....	7,910.68	6,000.00	.....
Spokane, Wash.	3,802.50	.....	3,802.50	2,000.00	.....
Duluth, Minn.	6,000.00	.....	6,000.00	3,000.00	.....
Tacoma, Wash.	7,000.00	500.00	7,500.00	7,000.00	8,000.00
Oklahoma City, Okla.	3,401.79	.....	3,401.79	25,000.00	10,000.00
San Diego, Calif.	35,000.00	20,500.00	55,500.00	.....	70,000.00
Sioux City, Iowa	4,795.20	.....	4,795.20	.....	4,030.50
Sacramento, Calif.	3,000.00	1,000,00	4,000.00	1,000.00	2,000.00
Racine, Wis.	4,000.00	.....	4,000.00	10,000.00	1,000.00
Fresno, Calif.	2,500.00	.....	2,500.00	1,800.00	10,000.00
Stockton, Calif.	1,500.00	800.00	2,300.00	5,000.00	.....
Springfield, Mo.	4,000.00	.....	4,000.00	4,000.00	4,500.00
Council Bluffs, Iowa	2,000.00	.....	2,000.00	10,000.00	4,500.00

[1] Average.

[2] Estimated.

Of the above twenty-seven cities only four reported receiving funds from private sources: Milwaukee, $7,096.39; San Diego, $5,000; Sacramento, $1,000. Dallas, Texas, reported receiving $17,000 in five years.

SECTION II. AQUARIUMS

Suggestions Concerning the Establishment of a Public Aquarium[1]

During the writer's long connection with the New York Aquarium, many cities in the United States have made inquiry respecting the cost of maintaining a public aquarium and the proper procedure in establishing one. Similar letters have also been received from countries as far away as India and New Zealand. Only a few of these cities have as yet carried such a project to completion. The communications, coming from local chambers of commerce or commissioners of parks, were at first answered at considerable length, but the information desired was not such as could be satisfactorily imparted by letters however lengthy, and involved frequently the making of drawings and measurements. It became necessary to advise applicants seeking such information to send an engineer to New York to study aquarium methods and equipment. Some of the cities that established them sent architects, having in mind chiefly an attractive building, without considering in the least what the region in question afforded in the way of exhibits, how extensive such exhibits were to be, or realizing that an aquarium having fresh-water and marine collections requires a complicated mechanical equipment. Some of the aquariums that were eventually founded still depend for their marine exhibits on annual exchanges with the New York Aquarium. The large size of this institution, created many years ago and constructed within the walls of an old fort, did not make it a very practicable model for an aquarium of smaller size, while much of its equipment had not until recently been modernized.

The considerations which follow are presented for the benefit of city officials and organizations still making inquiry respecting aquariums. The first points to be determined are those connected with the living exhibits, whether they are to consist of fresh-water or marine life or both and how many kinds are available within reasonable collecting and shipping limits. The transportation of fishes includes that of heavy tanks of water. All existing aquariums are still dependent upon their own efforts in collecting and transporting the aquatic forms which they display, as there are no sources from which such may be purchased. Many inland localities afford but limited variety in fresh-water exhibits, while the gathering and transporting of marine life by rail involves considerable expense and some losses in transit. Moreover the keeping of marine life is dependent upon the storage of sea water, its constant circulation and filtration, as well as heating in winter if derived from tropical waters. The keeping of fresh-water forms

[1] Information Circular No. 11, New York Zoölogical Society, by Charles H. Townsend, Director New York Aquarium.

is comparatively simple and inexpensive as compared with those requiring sea water.

Let us consider briefly the list of the more conspicuous fresh-water fishes available for a large aquarium situated, for instance, on the Great Lakes. Among those for which large tanks would be desirable are muskellunge, pike, pickerel, pike-perch, lake, rainbow, brook and other trouts, Atlantic salmon, lake sturgeon, fresh-water drum, long- and short-nosed gars, burbot, bowfin and two species of black basses. Certain large fishes of the Mississippi are also obtainable, such as shovelnosed sturgeon, giant gar and catfish.

These are about all that can be considered large, numbering perhaps little more than twenty all told. All others, such as the various species of whitefishes, basses, sunfishes, chubs, suckers and so on down the list, are of course available, but are less striking in the opinion of visitors and must constitute the exhibits of the smaller tanks. The Pacific Coast region lies too far away for practicable collecting purposes, and the larger fresh-water fishes available there would be limited chiefly to the trouts.

Unless the inland aquarium is to display a great variety of small things, it would be unwise to construct more fresh-water tanks than could be filled. It would also be unwise to construct as many sea-water tanks as would be required for the numerous kinds of sea fishes by an aquarium located on the Atlantic Coast. While small aquatic forms of life are attractive to persons interested in natural history, experience indicates that the average aquarium visitor likes to see the big and striking things, paying little attention to the labels describing those of small size.

An exhibit of fresh-water fishes, however varied, is one of rather monotonous coloration. The brilliantly colored fishes from Florida and Bermuda undoubtedly lead in attractiveness with visitors to the New York Aquarium, while northern sea fishes constitute a close second. An inland aquarium would necessarily find its marine and tropical exhibits more difficult to maintain than one located on the Atlantic Coast, where transportation by steamer, in tanks constantly supplied with flowing sea water, makes shipment safe and inexpensive as compared with shipment by rail.

Fishes still constitute the bulk of the exhibits in all aquariums, the number of aquatic reptiles, batrachians, mammals and invertebrates being usually rather limited, although they are entitled to the same consideration. Water plants and insects have hitherto been disregarded. The name aquarium permits of a very broad interpretation, and the ideal aquarium has not yet appeared in any country. The inland aquarium builder should therefore consider very fully the character and availability of the exhibits

proposed, before constructing tanks and pools of such number and size as would be difficult and expensive to stock and maintain.

The next points for consideration are those connected with the equipment necessary for the safe keeping of the aquatic forms brought together with so much difficulty and so quickly lost when the conditions of captivity are unfavorable. The possession of a large and beautiful building designed by an ambitious architect does not imply by any means that the conditions necessary to successful operation have been considered and provided. Judging from some of the sketches submitted, the proposed aquarium building would serve equally well for a library or a hospital. It is therefore highly desirable that the equipment of the aquarium be studied by an engineer or an experienced aquarist, after which the architect may be called upon to provide suitable housing, and this is possible with a very simple but well-lighted building. The character of the exhibits and the number of tanks and pools required having been determined, the problem of water supply and its circulation should be undertaken by a competent person. This can best be done by a careful study of methods employed in other aquariums, lest important matters be overlooked and expensive alterations later be made necessary. Fresh water may be taken from city supplies except in cases where such are treated with chlorine or otherwise made unfavorable to fish life.

Sea water must be stored in reservoirs in sufficient quantity to fill both reservoirs and exhibition tanks. Its purity must be safeguarded at all times by proper filtration and aeration. The mechanical equipment necessary to the operation of a public aquarium includes pumps for the circulation of sea water, filters capable of cleansing the entire overflow of the exhibition tanks on its way back to the reservoir, elevated distributing tanks above the level of the exhibition tank, heaters for winter use in the water system carrying all tropical collections and a refrigerating plant for the cooling of fresh water carrying northern fish in summer. Sea water pumps and piping must be of non-rust material, lest the water supply become impregnated by iron rust.

If marine collections are not to be included, the matter of equipment becomes at once a simple one, as pumps, salt-water filters, distributing tanks, heaters and reservoirs are all omitted and the number of employees thus reduced by more than half.

It is not necessary here to consider such auxiliary equipment as medium-sized metal shipping tanks for use by rail or by motor truck, or the extra large wooden tanks necessary for shipment by steamer.

The lighting of the building by skylights over the exhibition tanks is a matter of decided importance. Water is not easily lighted and such sky-

lights are seldom made large enough for satisfactory views of the living occupants of the tanks. Too much light on bright days can be restricted by shades, while on dark days light cannot be too abundant. Artificial light is a most unsatisfactory substitute. The line of skylights above the exhibition tanks should be almost continuous and should be twice as wide as the tanks to light them properly.

While all of the points considered above are of prime importance, there are other matters of secondary importance that should not be overlooked. The mere setting of the heavy plate glass fronts of exhibition tanks by inexperienced persons has resulted in much unnecessary breakage in all aquariums known to us. Water pressure will promptly crack heavy glass that is not evenly supported on every part of its margin. Persons contemplating the construction of an aquarium are therefore urged to undertake the initial expense of a careful study of some public aquarium known to be in successful operation and thus avoid mistakes that will result in greater expenses for necessary alterations. The New York Aquarium, which maintains perhaps larger collections than any institution of its kind, has had its full share of expensive alterations during the past twenty-three years, an experience which a new aquarium should be spared. During this period we have been called upon to write scores of letters on this subject. It is scarcely necessary to add that representatives sent to the New York Aquarium will be afforded every facility for studying the aquarium methods employed here.

Administration of the Public Aquarium[1]

The public aquarium, with its exhibits of living aquatic animals, which has come into existence in many of the larger cities of the world during recent years, may well be classed as a museum of natural history, since it exists for the education and recreation of the people. In some cities the aquarium is maintained as a feature of the zoölogical garden, while in others it is a separate institution. An aquarium is sometimes established in connection with the work of a biological laboratory. The aquarium in New York is maintained by the city, its entire management being in the hands of the New York Zoölogical Society, which provides all exhibits from its private funds. The aquariums in Boston and Detroit are city institutions, controlled in each case by a department of parks. There are small aquariums in American and European cities which are conducted entirely as private business enterprises. There are probably not less than thirty aqua-

[1] New York Zoölogical Society, Information Circular No. 6, by Charles H. Townsend, Director New York Aquarium.

riums in various parts of the world to which the public is admitted, exclusive of several very small ones connected with biological laboratories.

It has long been the custom of the National Bureau of Fisheries to operate large temporary aquariums at American industrial expositions, and these splendid governmental exhibits have been successful in the highest degree. It is a remarkable fact that at the world fairs of Chicago, St. Louis, Buffalo, Omaha, Charleston, Nashville and Portland, the government aquarium attracted in each case more visitors than any other single exhibit of the exposition. The larger permanent aquariums of the world attract the attention and patronage of the people to a greater extent than that usually directed toward the zoölogical garden or the museum of natural history or art.

The living collections of the larger public aquariums consist usually of both marine and fresh-water animals. It is the character of the exhibits, whether of marine or fresh-water forms, which determines the cost of maintenance in an institution of this kind. An aquarium with exhibition tanks requiring nothing more complicated than mere connections with a city water system, can obviously be operated at less expense than one requiring pumps for the circulation of sea water. It would be possible for any inland city not too remote from lakes or rivers to maintain excellent collections of fresh-water fishes and amphibians at small cost as compared with marine exhibits requiring stored sea water. The flow of fresh water being practically automatic, the equipment for operation can be reduced to very simple terms. With the introduction of marine exhibits, the equipment, management and cost of maintenance would be altogether different. The piping, if for permanent use with salt water, would be specially constructed of vulcanized rubber or other non-rusting material, with fittings to match. An underground reservoir for the storage of sea water would be necessary, together with rust-proof pumps of bronze for its circulation. Filters would be required for the clearing of the water constantly flowing back to the reservoir. With the use of steam pumps which must run night and day, there would follow an increase in the number of employees, some of them being mechanicians requiring special compensation. If tropical forms of life were added, water-heating equipment would be required to ensure their safety in winter. In connection with the matter of warm water for tropical exhibits in winter, it should be noted that cold water is equally necessary for northern forms of life in summer. A large aquarium in the latitude of New York, for instance, requires a decidedly complicated equipment if its aquatic exhibits include both northern and tropical, fresh-water and marine forms.

The construction of a reservoir for pure sea water is imperative even

if the aquarium be located on the seashore. Experience has shown that the water supply must be maintained in uniformly good condition, unaffected by storms, changes in salinity, winter and summer temperatures, and the impurities of harbors. Unfavorable variations in the water supply cannot be avoided where water is pumped directly from the sea.

The prime requisite for the keeping of aquatic animals in captivity is a plentiful supply of their natural element, to which everything else is subordinated. No completeness of mechanical equipment can make up for deficiencies in this respect. The water supply must be pure and abundant, whether for marine or fresh-water exhibits. The fresh-water supply of most cities is good enough for aquarium purposes as it comes from the pipes, but during long continued rains or necessary alterations of the system by the city from time to time, the water may become murky and remain so for weeks. Suitable filters are therefore necessary to ensure the clearness of water desirable for exhibition purposes. Filters for fresh water are installed to receive the water before it is delivered to exhibition tanks. In the case of permanently stored sea water, filters are also necessary, but they are so installed as to receive the drainage of the exhibition tanks and return the water to the reservoir clear and free from the impurities created by the feeding of animals. Fecal matter from fish tanks is less injurious to the water supply than bits of unconsumed food. All visible wastes should be siphoned from the tanks before any disintegration takes place. Stored sea water, like the freely flowing fresh water, must be kept in motion; this renders necessary the continuous operation of pumps.

The distribution of water throughout the building must be so arranged that it can be supplied to exhibition tanks in considerable volume if necessary. Some species of fishes require a stronger flow than others, and all crowded tanks will need it. The supply to each tank can easily be reduced by means of valves to suit the demand, and might not be sufficient if the distributing line of pipe were too small.

The reservoir for the supply of salt water should be located underneath or adjacent to the aquarium building. It should be of sufficient capacity to hold at least four times the quantity contained in the entire series of exhibition tanks which it serves. The larger it is made, the better, the supply as a whole being circulated at a slower rate and the body of water in the reservoir given more opportunity for precipitating its finer sediment, which will seldom be apparent until the annual cleaning of the reservoir. Stored sea water is kept in the dark to prevent the growth of marine algæ. The reservoir of the New York Aquarium was filled eight years ago with one hundred thousand gallons of pure sea water brought in from the open sea, and has been in use ever since.

The reservoir may be constructed with two or more compartments to facilitate periodical cleaning and to give the body of water not in use a period of rest, such treatment having a clarifying effect. All equipment tending to facilitate the distribution of stored water and to preserve its purity is desirable, as its vitiation, even in small degree, may result in serious losses of animal life. The living occupants of the aquarium have no choice but to remain in the tanks where they are placed. Lack of food can be long endured, but the impairment of their natural element is immediately fatal, whether from actual fouling or mere lack of oxygen. They may long survive cramped quarters and overcrowding if the supply of water is abundant. Pure water is the life blood of the aquarium, and the loss of all living exhibits may prove less expensive to an aquarium than the restoration of a damaged water supply.

There need be no deterioration of stored water if it is properly managed; circulation, filtration and periods of rest for the precipitation of sediment will keep it in good condition indefinitely. Additions to the supply will be necessary occasionally to replace losses from leakage and evaporation. Even after years of use, the increase in salinity from evaporation is negligible, and this could be corrected by the addition of fresh water. Aeration is automatic, as the surface of the water is exposed to air both in the reservoir and exhibition tanks, and the water is further aerated in falling from the different levels to which it is pumped. Stored sea water must be protected against discoloration from iron rust, but this is not difficult if the pumps and piping are made of non-rusting materials. Its action on iron pumps and piping is very destructive, and galvanizing affords only temporary protection.

The care of the water supply of any large aquarium is an ever-present responsibility that must be kept in mind by each employee of the institution during his hours of duty. While many of the operations relative to it are accomplished by mechanical means, the feeling of personal responsibility cannot be relaxed. The life-sustaining water of the aquarium must flow in purity and abundance at all hours of the day and night. All other features of aquarium management are of secondary importance. Pure water being the life blood of the aquarium organism, the mechanical means for securing its circulation and preservation are next in importance. The circulating pump, piping and filters might be compared to heart, arteries and lungs. The mechanical department of the institution is responsible for the continuous flow of water, its temperature, aeration and filtration. A considerable amount of machinery is necessary in a large aquarium, the principal features of which are pump, air compressor, filter and refrigerating machine.

Pumps should be made of bronze, as salt water is not only destructive to iron pumps, but the stored supply of water eventually becomes discolored by iron rust. In most large aquariums the pumping machinery is installed in duplicate as a safeguard against accidents, but the practice of driving air to the exhibition tanks having proved effective when for any reason it was necessary to stop the flow of water, the reserve pump is seldom used. A large air compressor has been used for several days at a time with satisfactory results.

The public aquarium is an institution which exists under the necessity of procuring its living exhibits directly from nature's sources of supply, the animal dealer having but a limited list of aquatic forms of life to offer. The collector for the aquarium must be prepared to go afield whenever specimens are needed for exhibition, and in northern latitudes enough collecting must be done in summer to provide against accidents that may occur in winter. Fresh-water forms cannot be had when lakes and streams are frozen, and the winter season is unfavorable for the transportation of collections from the tropics.

Exchanges of specimens with other aquariums are helpful only in varying the exhibits, since each must do its own collecting, and aquariums in the United States are few in number and so located as to be under similar geographic limitations. The collecting of aquatic animals involves their transportation in weighty tanks of their natural element, which moreover must be kept pure in transit. This compulsory procedure is always expensive. Experience has shown that the handling of fishes and other strictly aquatic creatures intended for exhibition alive can seldom be entrusted to fishermen. The untrained collector fails to appreciate the importance of taking those precautions in capture and shipment which are necessary for success. Aquatic animals must reach their destination not merely alive, but able to endure the conditions of captivity, always more or less unfavorable to wild creatures.

In addition to the necessity of guarding the water supply of an aquarium every hour of the twenty-four, and the daily care of the living exhibits, the staff of a large aquarium has the added duties of a public museum. There are crowds of visitors to be looked after, supplies to be purchased, machinery to be renewed, and a heavy correspondence with the public, the press and with zoölogists working in many lines. There are also labels, circulars and pamphlets to be prepared. The duties of clerk, bookkeeper, stenographer, etc., are, of course, similar to the duties of such employees in other museums. In the matter of assistance to teachers of biology alone, the New York Aquarium has stocked small marine aquaria in more than three hundred schoolhouses in Greater New York. The seashore collect-

ing for this work goes on summer and winter. Much of the work in an aquarium is not different from that of the average curator in a large museum of natural history, but we believe the duties of an aquarium curator to be more difficult, as all the exhibits in his department are living, moving creatures, to be catered for according to their special needs.

The feeding of as large a collection of fishes as that maintained at the New York Aquarium is a matter involving no small amount of labor and expense. The food consists of meat, fish, clams, sliced, chopped or minced as may be necessary to suit the size of the specimens. The whole collection is fed carefully in order that there may not be an unnecessary amount of food left unconsumed, which would have to be removed to prevent its affecting the water. Much of the food used in an aquarium is obtainable in the markets and consists largely of food fishes, such as cod and herring. Preference is naturally given to the cheaper kinds of fish when the supply of such is abundant and when they are of such a character that they can be cut and prepared to advantage. Very little meat is required, but clams are used in great quantities. In addition to such foods as are procured in the markets, a considerable supply of natural live food is brought in from the adjacent bays and shores by the aquarium collector, consisting of minnows, shrimps, mussels, crabs, marine worms, small soft clams and beach fleas or amphipoda. More or less live food is always kept on hand in reserve tanks. In summer when live food is easily obtained, a great deal of it is used, being better for the collection in general, while in winter a large amount of market food is necessarily consumed.

The interesting little sea horses usually to be found at the aquarium can be kept to good advantage only when they are well supplied with Gammarus, a very minute crustacean secured by gathering along the beaches bunches of fine sea moss, which they inhabit. The sea horses in the tanks are usually seen on the bottom picking this minute life from the algæ. Even under the best conditions it is difficult to supply the sea horses with a sufficient variety of the live food required, and specimens have seldom lived longer than a year. It has been found that the longer a sea horse tank can be left without cleaning, the better are the chances for maintaining colonies of Gammarus for its food. Young trout and salmon in the fish hatchery are fed successfully on minced liver, and they are also very fond of herring roe. At the New York Aquarium herring roe has proved to be an excellent food for young whitefish.

All the fish food from the markets is headed and eviscerated before being cut up, as market fish are frequently kept too long for any part of the viscera to be wholesome. The cost of the market food used at the aquarium averages about $150 a month. The various kinds of live food

UNITED STATES AND TERRITORY

City	Boston, Mass.	Chicago, Ill.	Detroit, Mich.	Honolulu, Hawaii	New Orleans, La.	New York City, N. Y.	Philadelphia, Pa.	San Francisco, Calif.	Washington, D. C.
Institution	Boston Aquarium	Lincoln Park Aquarium	Belle Isle Aquarium	Honolulu Aquarium	Odenheimer Aquarium	New York Aquarium	Fairmount Park Aquarium	Steinhart Aquarium	Aquarium, U. S. Bureau of Fisheries
Presiding Officer	Walter H. Chute	Floyd S. Young	John E. Timmons	F. A. Potter	H. J. Neale	Chas. H. Townsend	William E. Meehan	Barton W. Evermann	L. G. Harron
When opened	November, 1912	May 31, 1923	1904	March 17, 1904	February 3, 1924	December 10, 1896	Nov. 24, 1922 complete*	Sept. 29, 1923	1905
Owned by	City	State of Illinois	City	Territory of Hawaii	City	City	City	City	United States Government
Controlled by	Park Commission	Lincoln Park Comm'rs.	Dept. Parks & Blvds.	University of Hawaii	Audubon Park Comm'rs	N. Y. Zoological Soc'y.	Fairmount Park Comm'n	Calif. Academy of Science	U. S. Bureau of Fisheries
Shape of Building	L-shaped		Grotto style	Cross-shaped	Circular	Circular			Installed in office building, (first floor)
Size of Building	150' x 100'	75' x 150'	210' x 74'	100' x 24' long, + 80' x 24'	50' diameter	205' diameter	320'	116' x 182'	
Cost to build	$150,000	$250,000	$175,000	$15,000	$60,000	Reconstructed Fort	Reconstructed ($500,000?)	$305,257.42	
Annual Maintenance Cost	$40,000	$80,000	$19,000	$7,500	$6,000	$68,000	$30,458	$40,000	
Exhibition Tanks	62	48	56	32	15	89	114	58	29
Capacity of Tanks	45 to 1,500 gallons	25 to 2,000 gallons	200 to 1,200 gallons	12,000 gallons	1,560 gallons each	310 to 4,590 gallons	125 to 15,000 gallons	1,280 to 1,400 gallons	70 to 700 gallons
Pools	1	1	4	2	1	7	1	5 and 1 swamp	1
Capacity of Pools	4,500 gallons		3,000 gallons each	25,000 gallons	9,000 gallons	15,000 to 73,000 g.	12,000 gallons	2,800 to 82,000 gallons	13,000 gallons
Reserve Tanks	31	16	26	4	3	29	35	14	None
Total capacity Reserve Tanks	6,500 gallons	4,000 gallons	5,200 gallons		5,000 gallons	7,596 gallons			
Reservoirs	2	4	2	2	2	1	3	5 and 4 cisterns	2
Capacity of Reservoirs	128,000 g. total	1,200 gallons total	25,000 gallons each	14,000 gallons	20,000 gallons each	100,000 gallons	70,000 gallons	10,000 to 100,000 g.	12,500 total
Linear feet Glass permanent wall Tanks	165	160	280	180	75	455	511	308	143
Linear feet Glass floor Tanks	80	135	48			50	136	None	8
Gallons Water in Tanks, Salt	17,400	None	20,000	24,000		100,000	45,500	33,040	
Gallons Water in Tanks, Fresh	15,600	60,000	30,000	1,000	27,400	100,000	50,000	30,000	12,000
Gallons used daily, Salt	90,200	None	45,000	40,000		214,000	500,000	30,000	
Gallons used daily, Fresh	100,700	30,000	50,000			150,000		30,000	120,000
Number of Exhibits (1924)	1,064	78 varieties	2,593	306	514	4,713	2,749	7,896	
Fishes	1,003	0	2,500	300	500	4,000	2,438	7,515	2,000
Mammals	4	36	5	0	0	1	0	10	
Reptiles	16	30	60	2	5	100	31	160	
Amphibians	16	18	38	0	6	60	279	15	
Invertebrates	25	0	0	0	3	550	1	264	
Birds	0		0	0	0	2	0	2	
Open every day	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Except Sundays and holidays
Between what hours	10 to 5	9 to 5	9 to 6	10 to 5 (Sun. 1 to 5)	10 to 5 or 6	9 to 4 or 5	9 to 5	10 to 5	9 to 4:30
Entrance fee	None	None	None	Yes	No	None	None	None	None
Visitors a Day	718	4,800	4,380	80	3,571	5,000	1,000	4,040	No record
Visitors a Year	261,912		1,600,000	30,000		2,000,000	400,000	1,470,705	No record
Persons employed	17	14	6 (and 4 part time)	4	2	26	19	14 and 4 part time	
In what capacity	Director Matron 7 Engineers 1 Engineer, part time 1 Mechanic 6 Attendants		Director 2 Aquarists 7 Attendants		(Aditional for emergency)	Director and 4 officers 1 matron 1 telephone operator 3 engineers 3 firemen 13 attendants		Director 3 engineers Supt. 2 janitors Asst. Supt. Doorman Aquarist Relief man Collector 3 feeders and Carpenter attendants	
Cards, Specimens, Pamphlets	No	No	No	Post-card Folder	Yes	All three	No	Plan selling cards	No
Balanced Aquaria	18	58	16	None	Yes	None since 1921	None	67	2
Total capacity	300 gallons		250 gallons			42 planned: 500 gallons		1,100 gallons	150 gallons
Water Systems	4 — Fresh Fresh refrigerated Salt Salt-heated	2 — Fresh-refrigerated Fresh-heated	4 — Fresh Fresh-heated Fresh-refrigerated Salt-heated	Direct from ocean	2 — Fresh Salt	6 — Fresh Fresh-refrigerated Fresh-heated Harbor (brackish) Harbor-heated Pure salt-heated	3— Fresh Fresh-heated Salt heated (Plan fresh and salt refrigeration)	5 — Fresh Fresh-heated Fresh-refrigerated Salt Salt-heated	City supply
Fish Hatchery	Yes	Yes	Yes		Yes	Yes		Yes	For exhibition only
Salt or Fresh Water	Fresh water	Fresh water	Fresh water		Fresh	Both		Fresh water	Fresh water
Number Fry hatched annually	5,000	35,000,000	10,000			Average 1,000,000		No record yet	5,000,000
Disposition of same	Exhibition and public waters	State waters	Aquarium and public waters		Aquarium and Park Lakes	Local public waters		To parties in state	Distributed

* Tropical house opened June 15, 1913.

Plate No. 368

A TABLE OF INFORMATION REGARDING THE AQUARIUMS OF THE UNITED STATES

A part of a comprehensive report entitled "A Table of Information Regarding the Large Aquariums of the World," by Ida M. Mellen, Aquarist and Secretary, New York Aquarium, published as a part of the report of the director of the New York Aquarium, New York Zoölogical Society, January 1925, pages 13–15.

brought in by the collector in connection with his regular work of capturing specimens for exhibition is valued at about half that amount.

The natural food of most fishes consists chiefly of other fishes, which may at times be their own young. Fishes in general are feeders on animal life, and their food supply includes practically the whole aquatic fauna. Fishes may be described as not only piscivorous and insectivorous, but as feeders on crustaceans, mollusks and worms. Plants do not constitute much of their food, although a few kinds feed freely on them, such as buffalo fishes, carps and minnows. The young of many fishes nibble at tender plant shoots.

The Educational-Recreational Value and Uses of Aquariums

Aquariums wherever established in the United States have proven to be of tremendous interest to the people, as evidenced by the very large attendance. The daily average attendance at aquariums reported upon in the United States ranges from approximately eight hundred to five thousand daily, the greater number having an average daily attendance of over four thousand. The per capita cost of maintenance based upon records of 1924 ranged from approximately fifteen cents (Boston) to one and one-tenth cents (Detroit). New Orleans reports a daily attendance and an annual maintenance cost which would give the per capita cost as four-hundredths of a cent, but inasmuch as this aquarium was opened for the first time in February, 1924, time had not yet elapsed for a true record of the capita cost.

It would appear that from the standpoint of the amount of space occupied by aquariums, the capital investment involved and the annual maintenance costs, this type of educational-recreational institution yields a fair return in general service. But in addition to the service rendered through general attendance the service of aquariums may be and often is extended far beyond the walls of the institutions themselves. These services include the following:

1. *Service to schools.* This may take several forms, *viz.:* (*a*) Providing specimens for small aquaria in classrooms. In 1925 the New York Aquarium provided specimens for small aquaria in the classrooms of thirty-eight schools in New York City. (*b*) Providing specimens for scientific work in high school laboratories and institutions of higher learning. (*c*) Talks and illustrated lectures before classes and school assemblies. (*d*) Talks and lectures in courses of evening lectures offered by boards of education for the general public. (*e*) Arranging for guide service to teachers bringing classes to the aquarium. (*f*) Promotion of the organization of nature study or hiking clubs among the pupils whereby the children under the leader-

ship of qualified teachers or other persons whose interest can be enlisted, may, by excursions to parks, seashore, or to streams, ponds, lakes in the open country, become acquainted with specimens of aquatic life in their natural habitat.

2. *Lecture service for the general public.* This may take the form of lectures before many different kinds of clubs and organizations, radio talks, etc. Both for school work and for this general service it would be desirable, if funds would permit, to have on the staff of the aquarium one or more qualified persons whose entire time would be taken up with this kind of service, for obviously the regular staff will hardly have the time and energy to conduct such a service to its maximum possibilities.

3. *Publication of pamphlets and booklets of general informational interest.* The guide books usually published by aquariums are of very great value from a general education standpoint. Such publications as to the construction of small aquaria; aquaria in homes; how to care for specimens in small aquaria, etc., are of value.

4. *Scientific contributions of aquariums.* Some of the aquariums have laboratories where instructors and advanced students from higher institutions of learning are allowed to pursue original investigations. The aquarium is in itself a laboratory of very great value, and it is not surprising, therefore, that from aquariums in charge of scientifically trained staffs many valuable contributions of a scientific nature relating to aquatic life forms are constantly coming. The publications of this nature from the New York Aquarium are voluminous and of a very high order of scientific merit.

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CHAPTER XVIII

BOTANICAL GARDENS

Many park and recreation systems in the United States have examples of special types of gardens such as rose gardens, water plant gardens, rock gardens, wild flower gardens and Shakespearean gardens, but only a very few have examples of genuine botanical gardens. The history of botanical gardens in the United States is almost as notable for the number of failures as for the successes of the most outstanding ones. The following is a brief historical outline of some of the attempts that have been made to establish gardens and of some of the existing gardens:

1. *The Bartram Garden, Philadelphia, Pennsylvania.* The earliest botanical garden in the United States was privately established in 1728 by John Bartram. After many vicissitudes the old homestead and the grounds in which the garden was situated have been acquired by the Fairmount Park Commission. The commission has restored the old homestead and has done much toward the rehabilitation of the garden. At the present time, however, this garden is chiefly of historical interest.

2. *The Elgin Botanic Garden, New York City.* The Elgin Botanic Garden was established in New York City in 1801 by Dr. David Hosack, professor of botany and materia medica in Columbia College. The garden covered a tract of twenty acres. It was by act of Legislature transferred in 1810 to the State of New York, which subsequently transferred it to Columbia College. Because of lack of funds it was ultimately abandoned. Dr. Hosack, in a catalogue of plants which he issued in 1806, mentions movements for the establishment of gardens at Boston in connection with the "University of Cambridge," at Charleston, South Carolina, and at Princeton, New Jersey, in connection with the "College of Princeton."

3. *The Botanic Garden of Harvard University.* This garden was established in 1807 and has been in continuous existence to this day (1927). Like most botanical gardens established by universities and colleges its primary use has been for scientific purposes. However, its general public service has not been small, and the new plans for the garden involve an extensive program of general educational service. (See page 954 for notes on new plan.)

4. *The Botanic Garden of Transylvania University, Lexington, Kentucky.* In the first quarter of the nineteenth century a botanical garden was established in connection with Transylvania University, Lexington, Kentucky,

by C. S. Rafinesque, secretary of the board of managers of the institution. He, in conjunction with Dr. W. H. Richardson, president of the board of managers, published the "First Catalogue and Circulars of the Botanical Garden of Transylvania University at Lexington, Kentucky, for the year 1924." This garden was apparently abandoned shortly after that date.

5. *The Hunt Botanical Garden, Brooklyn, New York.* In 1855 the Hunt Botanical Garden was established in Brooklyn, New York. Notwithstanding the fact that this garden was inaugurated under splendid conditions, the land having been donated and a rather large endowment (for the time) established, it ceased to exist within one year from the date of its inauguration.

6. *The Arnold Arboretum.* Through a bequest of one hundred thousand dollars made by Mr. James Arnold (1868), a merchant of New Bedford, for the improvement of agriculture or horticulture, the Arnold Arboretum of Harvard University had its origin. The trustees of the estate of Mr. Arnold decided to turn over the legacy to the president and fellows of Harvard University, providing it should be devoted to the establishment and maintenance of an arboretum on a part of a farm in West Roxbury which had been given to the university by Mr. Benjamin Bussey. On March, 1872, this plan was carried out and one hundred and twenty acres of this farm were set aside for the proposed arboretum. In December, 1882, a contract was made between the university and the City of Boston whereby the city agreed to add certain adjoining lands, construct and maintain under the direction of the park commission a system of drives and walks, to police the grounds and to assume all taxes which might be levied on the property. This contract was drawn to cover a period of nine hundred and ninety-nine years. The university agreed to open the arboretum to the public from sunrise to sunset during every day of the year, reserving, however, entire control of all collections and of the grounds with the exception of the drives and walks. The principal collection of trees and shrubs was not planted until 1886. In 1894 additional land was added to the arboretum by the president and fellows of Harvard University. The arboretum now occupies two hundred and forty acres, the topography of which comprises areas of meadow, hill and valley. (Excerpts from "A Guide to the Arnold Arboretum," Charles S. Sargent, Director. Printed by the Riverside Press, Cambridge, 1925.)

7. *Botanical Garden of Michigan Agricultural College.* The Michigan Agricultural College (now the Michigan State College of Agriculture and Applied Science) established a botanical garden in 1873. It covers at the present time (1927) about two and one-half acres, but plans are under way to increase the area in the near future. It has been in continuous existence

since its establishment by Dr. W. J. Beal, and is used chiefly for research in connection with the botanical work in the college.

8. *The Missouri Botanical Garden.* The Missouri Botanical Garden was established in 1889 through a bequest by Mr. Henry Shaw of St. Louis. For about thirty years previous to this date Mr. Shaw had been privately bringing together material for the garden on the lands about his residence. During this time the garden was known as Shaw's Gardens. Because of the increasing difficulty of growing successfully trees, shrubs and herbaceous plants under the conditions of a city environment which has gradually enveloped the area occupied by the Missouri Botanical Garden, a new site of approximately thirteen hundred acres was purchased (1924–1925) some thirty-seven miles to the west of the city limits at Gray Summit. Certain areas of this tract are now in course of development (1926). At the present time the new site is considered merely an extension of the Missouri Botanical Garden, but no doubt in course of time it will become the garden proper.

9. *The Buffalo Botanical Garden.* In the annual report of the Board of Park Commissioners of Buffalo, New York, for the year 1894, is recorded the following statement: "The matter of establishing a botanic garden on South Park has been under advisement for over two years. Finally on April 3 (1894) it was determined to devote the park to this purpose. The firm of Olmsted, Olmsted & Eliot was engaged to furnish plans for such a garden, eliminating from the park plan heretofore submitted and adopted, all features inconsistent with this special purpose. In further pursuance of the scheme Prof. John F. Cowell, a well-known botanist of this city of high standing, was on May 1 engaged as director of the garden, and entered on his duties July 1. In due time a general plan, together with a detailed list of suitable plants, was received from the landscape architects, and accepted by us as the basis of the work."

During this first year about three thousand plants of various kinds were acquired by collection and donations, and a boiler house, stable, tool house and three propagating houses were erected. During the years immediately following other propagating houses, office building, residence for the director and a conservatory were erected. The latter was completed in 1900. During this period there was marked progress in carrying forward grading plans, installation of drainage and water systems, building of roadways, setting out extensive plantations of trees, shrubs and herbaceous plants, collecting and organizing an herbarium, establishing a library, institution of educational service for students and similar enterprises. During the past quarter of a century the garden has slowly but surely made progress in further developments and services. It is practically the only extensive botanical garden in the United States that is wholly under the control and

wholly supported by a municipal park department. South Park comprises an area of one hundred and fifty-five acres of land and water. Certain minor portions of the park are used for active recreations.

10. *The New York Botanical Garden.* The enabling act providing for the establishment of the New York Botanical Garden was passed by the Legislature of the State of New York in 1891, which act was amended in 1894, 1896 and 1914. The movement for the establishment of the garden was inaugurated and the legislation procured by a committee of the Torrey Botanical Club appointed in 1889. The garden is a coöperative enterprise between the City of New York and the New York Botanical Garden Corporation. Originally about two hundred and fifty acres of land in the northern part of Bronx Park were set aside for the garden. This area has been added to from time to time until the total area of the garden is now (1927) approximately four hundred acres. This with the exception of the new site of the Missouri Botanical Garden is the largest area devoted to botanical garden purposes in the United States. (For a map and general plan of the garden see pages 963–966. For the plan of its administration see pages 967–970; and for the method of financing it see pages 976–977.)

11. *Brooklyn Botanical Garden, New York.* The attempt to establish the Hunt Botanical Garden in Brooklyn has already been noted. In the original plan of Prospect Park a plan for a botanical garden was included but apparently no attempt was ever made to carry out the plan. The third attempt to establish a botanical garden in Brooklyn was consummated in 1910 by the establishment of the present Brooklyn Botanic Garden. The garden now occupies a site of approximately fifty acres. It is operated as a department of the Brooklyn Institute of Arts and Sciences. The garden is a coöperative enterprise between the Brooklyn Institute of Arts and Sciences and the City of New York. The city owns the land upon which the garden is located; it builds, lights, heats and repairs the buildings and annually makes an appropriation for general maintenance. Its relation with the city is through the department of parks. With assured financial support from the city and with a gradually increasing endowment coupled with growing membership lists, the Brooklyn Botanical Garden gives every promise of being able to carry on indefinitely with increasing effectiveness the highly useful educational, recreational and scientific work which it has already so admirably done during the past years of its history.

12. *Other Botanical Gardens.* During the latter part of the nineteenth century botanical gardens were established at the University of California, University of Pennsylvania and Smith College.

13. *The National Botanic Garden, Washington, D. C.* This garden was established in 1820 by the Columbian Institute, a private organization

incorporated under the laws of the District of Columbia. By resolution of Congress a small tract of land forming a part of the eastern extremity of the Mall was turned over to the institute for the botanic garden, an area forming part of the garden today (area, 1926, 11.8 acres). The institute, owing to financial difficulties and other causes, ceased to exist in 1837. The garden was more or less neglected for about thirteen years (1850) when it was finally taken over by the government. It is under the direct control of the Library Committee of Congress. During the past decade several attempts have been made to reëstablish the garden in a more favorable and more commodious location, a movement which will no doubt finally prove successful.

14. *Botanical Garden of the University of California, Berkeley, California.* The garden was established in 1891 by the State of California through the university. It occupied 2.5 acres in 1920.

15. *Botanic Garden of Smith College*, established 1903. Garden occupies an area of five acres.

16. *Johns Hopkins University Botanic Garden*, established 1908. Area occupied, three acres.

17. *Botanic Garden of the University of Pennsylvania*, established 1894. Area of garden, 4.5 acres.

18. *The Cornell University Arboretum*, established 1908. Area of site, twenty-five acres.

The Human Service Values of Botanical Gardens

Dr. Nathaniel Lord Britton, director of the New York Botanical Garden, in an address at the Buffalo meeting of the American Association for the Advancement of Science, 1896, said, with reference to the origin and human use values of botanical gardens:

"The cultivation of plants within small areas for their healing qualities by the monks of the Middle Ages appears to have been the beginning of the modern botanical garden, although these mediæval gardens doubtless took their origin from others of greater antiquity. Botanical gardens were thus primarily formed for purely utilitarian purposes, although the æsthetic study of planting and of flowers must doubtless have appealed to their owners and visitors. Their function as aids in scientific teaching and research, the one which at present furnishes the dominating reason for their existence, did not develop much, if at all, before the sixteenth century, and prior to the middle of the seventeenth century a considerable number existed in Europe in which this function was recognized to a greater or less degree, of which those at Bologna, Montpellier, Leyden, Paris and Upsala were perhaps the most noteworthy. The ornamental and decorative taste for planting had meanwhile been slowly gaining ground, and during the eighteenth century attained a high degree of development. Many persons

of wealth and influence fostered this taste and became, through the employment of men skilled in botany and horticulture, generous patrons of science. The world was searched for new and rare plants, which were brought home to Europe for cultivation, and many sumptuous volumes, describing and delineating them, were published, mainly through the same patronage. The older gardens were essentially private institutions, but as the rights of the people became more and more recognized, many existing establishments and an increasingly number of newly founded ones became, to a greater or less extent, open to the public, either through an admittance fee or without charge. The four main elements of the modern botanical garden have thus been brought into it successively: (1) the utilitarian or economic; (2) the æsthetic; (3) the scientific or biologic; (4) the philanthropic.

These four elements have been given different degrees of prominence, depending mainly upon local conditions, some gardens being essentially æsthetic, some mainly scientific, while in our public parks we find the philanthropic function as the underlying feature, usually accompanied by more or less of the æsthetic and scientific."

Dr. John Merle Coulter, in an address delivered at the dedication of the laboratory building and plant houses of the Brooklyn Botanical Garden, 1917, discussed the human service values of botanical gardens under the heads of their social contribution, educational contribution and scientific contribution to human welfare. With respect to the botanic garden as a social service institution, he says in part:

"A botanic garden is a social contribution because it is one answer to the problem of congestion. It is not sufficient to have open spaces, even when those spaces are beautified as parks. There cannot be too many of these, but something more is needed. I wonder if you all appreciate what the touch of nature means. It is something more than open space for breathing. It is a kind of elixir that helps men to be men. The garden is a museum of nature, not merely an area left to nature. In it there are assembled the representatives of many regions, so that it gives a world contact. It is a great service to give any community the opportunity of such a contact.

The contact with nature presently develops the contact of interest, and interest outside the routine of living, when these interests are worth while, are both curative and stimulating. Then when interest is awakened, and plants are examined as individuals, and not merely as a general population, the wonders of plant life begin to appear. I wonder how many know why leaves are green and flowers colored; why some plants are trees and others herbs; why some trail and climb, and others stand erect. All this vegetation is the natural covering of the earth, which cities have eliminated. It is the covering which makes your life and all life possible. I should say, therefore, that the mere presence of a botanic garden in a city is like having the spirit of nature as a guest, and all who become acquainted with this spirit are the better for it.

There is nothing more artificial than city life, and therefore, nothing more abnormal. Some are able now and then to renew their contact with

the natural and normal, but most are not. A botanic garden brings to the many a touch of what only the few can secure for themselves. You have doubtless developed some very definite and effective ways of expressing the social contribution of this garden to the life and welfare of this community. But to me, speaking in general terms, the conspicuous social contribution is to provide the opportunity, and to see to it that all the people take advantage of it."

Of the educational service contribution of a botanic garden, Dr. Coulter said in part:

"It is this contribution to the community that you have developed with remarkable success. Nature is a great teacher when she really comes in contact with the pupil. The notion is too prevalent that knowledge comes from books; that one can read about nature and acquire knowledge of nature. One might just as well try to acquire knowledge of business by reading about business. Knowledge comes from experience, from contact. We must distinguish between knowledge and information. Knowledge is first-hand, obtained from actual contact with the material. Information is second-hand, hearsay, coming from no actual experience. Reading about nature, therefore, brings information; contact with nature brings knowledge. To serve a community by bringing its children into contact with nature is a great educational service.

Perhaps the most significant contact with nature is the handling of plants. To learn to grow plants and to grow them everywhere, especially near our great centers of population, is a crying need. The development of home gardens is not merely a service for social betterment that all recognize, but it is becoming more and more a public necessity. (Spoken at a time of urgent need of food production during the World War.— *Editor.*) Any institution that gives you and your children this training is not merely an educational institution, but also a public benefactor. A botanic garden doing such work is like a power house, radiating energy throughout the community. Such training is an equipment which not only enriches life, but is also an equipment for service. In providing such an opportunity, a city can do nothing better for its young people and its homes, and through them for itself."

Concerning the scientific contribution to human welfare that a botanic garden might make, Dr. Coulter says in part:

"The scientific contribution I regard as your great opportunity, and I wish to help you realize it. We are a very practical people, and unless we can see immediate returns from an investment, we decline to undertake it. Very few people appreciate what it has taken to make things practical. We speak of fundamental science and practical science; sometimes we call these two phases pure science and applied science. The general impression is that pure science holds no relation to public welfare, and that applied science serves our needs. You should know that all applied science depends upon pure science; that there would be nothing to apply unless pure science

had discovered it. If we had only applied science, it would soon become sterile. It is pure or fundamental science that keeps applied science alive, that makes progress possible. For example if Faraday had not worked in pure science, Edison would have had no basis for his wonderful inventions. And so it is throughout the whole range of the practical things we are using today. To neglect pure science and support only applied science would be like wanting children and eliminating parents. When I hear those who are regarded as practical men lauding our practical achievements, which certainly deserve praise, I think of them as those who would praise the practical electric light and forget the impractical, because unseen, power house. Scientific research is the power house that generates all the energy we apply in developing what may be called the machinery of our civilization."

Dr. Coulter at this point in his address gave a number of examples illustrating the value of scientific research in relation to the production of food through the discovery of the laws of heredity which placed agriculture upon a scientific basis, through the development of drought-resisting plants, control of the diseases of plants, etc., concluding with the following paragraph:

"Years ago an Austrian monk, working in his monastery garden, discovered some interesting behavior in the plants he was breeding. He recorded his facts and his conclusions in an obscure journal, and no one paid any attention to it. What could be expected from a monk pottering in his garden? Years afterward, the contribution was discovered, and today it is the basis of most of our work in the study of heredity, and this in turn has made our agriculture scientific. No one knows what may turn up in a garden like this one of yours. It is a gold mine of opportunity. See to it that it is cultivated."

Dr. C. Stuart Gager, director of the Brooklyn Botanical Garden, in a very interesting and informing article entitled "The Educational Work of Botanical Gardens" (Contribution No. 1, Brooklyn Botanical Garden, reprinted from *Journal of the New York Botanical Garden*, 12:73–85, Ap. 1911), summarizes the educational work of botanical gardens as follows:

"The educational work of botanical gardens falls naturally under six heads: (1) Information by means of well-labeled specimens; (2) Popular lectures; (3) Research work; (4) Periodicals and publications; (5) Courses of lectures and instruction to organized classes; (6) Docentry. These various phases of botanical education developed in connection with gardens approximately in the order named.

1. *Information by means of well-labeled specimens.* A museum has recently been described as a collection of attractive labels illustrated by specimens. The earliest educational work of botanic gardens was confined almost entirely to what might be accomplished by such means. In other words, the garden was a place where anyone sufficiently interested could go and 'educate' himself, *i.e.*, secure without the aid of a teacher a certain

limited amount of information about plants. From the nature of the case, this must always remain a prominent and valuable phase of botanical instruction by gardens. In the early gardens the labels gave only the scientific name of the plant, but subsequently there was added the common name, the geographical distribution, and the place of the specimen in the system of classification — the family to which it belongs.

So far, no attempt was made to illustrate any phase of botany but classification such labels indicated the limits of information one might obtain, but, as a rather modern development. Appearing first in this country in the Missouri, Harvard and New York gardens, plantations were organized on other bases, such as geographical distribution, relation to environment (ecology), modification of parts (morphology), economic use, both for food and medicine, plant breeding, and the history of botany. Thus the range of information to be obtained from labels was greatly extended. But after all, and at best, the result was for the most part only information about plants, more or less detached and uncorrelated; not botanical education. The general public visit a botanic garden for recreation rather than information, and while these well-labeled plantings do a real service, and meet with genuine and widespread appreciation, they leave much to be desired. They would be justified, however, from the standpoint of education, if they did no more than extend the interest of the public in things botanical, or serve to give an added interest in life.

2. *Popular lectures.* As an educational force in botanic gardens, popular lectures are only second, in time of development, to the labeling of the specimens. They were introduced as early as 1545 at the Padua garden. At first they were no doubt largely confined to the medicinal properties of plants, illustrated by living specimens from the garden and greenhouses and by dried specimens from the herbarium. Later they have been extended to all phases of scientific botany, from the early spring flowers to botanical exploration and theories of heredity. The introduction of the stereopticon has here, as elsewhere, done much to increase the interest in such lectures.

3. *Research.* Botanic gardens, in the true sense of the word, have always been centers of investigation; otherwise they tend to become merely pleasure parks. The educational work of the early physic gardens was very largely research, while practically no attention was given to popularizing. Thus, when John Gerarde, in the latter part of the seventeenth century, acting for Lord Burleigh, prepared the letter to Cambridge University recommending that a physic garden be established there, the purpose stated was to encourage 'the facultie of simpling,' and the gardens of Bologna, Montpellier, Leyden, Paris and Upsala (the seat of Linne's labors) flourished in the middle of the seventeenth century for the primary purpose of aiding teaching and research. Well-equipped garden laboratories for research are becoming more and more common, especially in gardens organically connected with, or affiliated with colleges and universities.

4. *Publications.* At first these were mainly confined to catalogues of the living plants; then were introduced guides to the grounds, seed lists,

lists of plants offered in exchange, guides to the museum and conservatories, and finally monthly and other periodicals, embodying the results of research, and other matters pertaining to the advancement of botany or the organization of the institution.

5. *Courses of lectures and instruction to organized classes.* This is one of the latest and most important educational developments of botanic gardens. Regular courses were offered to medical students as early as 1829, in the Chelsea Physic Garden (England), and this has now become an important phase of activity, especially of all gardens connected in any way with educational institutions. In fact didactic instruction by botanic gardens has developed parallel with the growing tendency to establish them in connection with universities or other educational institutions. In earliest and later private gardens, practically no attention was given to teaching. In the physical gardens of apothecaries' societies and schools of medicine, the teaching was confined to the nature and properties of medicinal plants, but with the organization of university gardens and gardens closely articulating with institutions of learning, was introduced formal instruction of classes in various phases of pure and applied botany.

6. *Docentry.* Docentry is a comparatively new idea in education and is confined to institutions devoting a considerable portion of time to the popularizing of knowledge. So far as the writer knows, the New York Botanical Garden was the first botanical garden employing docentry. The former system, here as in most other gardens, was that of personal guides for visitors who apply, and aids and gardeners were detailed for this purpose. Under the new system there is a regularly appointed 'docent,' who leaves the front door of the museum building every week-day afternoon at three o'clock, with a definite route for each day. Parties may start with the docent, or he may in turn meet with two or three interested visitors, volunteer interesting information concerning the trees and other plants of the collections, and thus assemble an extempore class."

Elements of the Design of a Botanic Garden

Selection of Site.

In selecting a site for a botanical garden the following factors may be considered:

1. The site should be far enough removed from the environment of a city to escape the deleterious effects of dust, smoke and poisonous gases upon the plants. By taking account of prevailing winds and the location of the principal centers of transportation and manufacturing it might be quite possible to locate and successfully conduct a botanical garden fairly close to the center of population; but on the whole a site, which from the standpoint of atmospheric conditions more nearly approximates the open country, is to be desired.

2. Topographically it is desirable, especially for large gardens, to secure a site possessing a diversity of elevations and natural forms such as hills,

rolling uplands, valleys, lowlands, stream or streams, springs, lake, or one which presents the possibility of creating one or more bodies of water. It is, of course, next to impossible to secure topographical diversity in a small area except in very exceptional circumstances.

3. A diversity of soils as to quality, texture and degrees of moisture is highly desirable. In larger areas of diversified topography it is likely that a diversity of soils will be had naturally. In the smaller area this may be accomplished by additions, subtractions and by fertilization. Good drainage is of the highest importance. Where this is not had naturally artificial drainage becomes a fundamental necessity. This is an important point to keep in mind in selecting a site, for the installation of an elaborate artificial drainage system is very expensive and may be avoided by proper care in selecting the area. On the whole, a sandy loam is best both from the standpoint of drainage and from ease in cultivation.

4. Special attention should be given to adequacy of water supply and the possible cost of developing the supply. It would be fatal to the success of any garden if there were not at all times a never-failing source of water in excess of even emergency demands.

5. In the selection of the site for a large garden an effort should be made to secure a site presenting as diversified as possible natural or native plant growth — trees, shrubs, herbaceous plants. Very few people, especially city dwelling people, are familiar with plants indigenous to their locality. A site that presents a rich variety of plant forms native to the region can be readily made available to study while the remainder of the garden is under development. The expense of transplanting and special care while growing will likewise be saved.

6. Accessibility to the people is a factor of prime consideration. It may sometimes be difficult to harmonize accessibility with other factors of prime importance, but in this day of growing private ownership of motor vehicles, operation of rapid transit and motor bus routes and increased construction of good roads, it is easier to locate a site that will harmonize all the essential factors involved in selecting a site than was true a quarter of a century ago.

7. The utmost care should be taken in choosing a site to determine the probable direction of the growth of the population and especially the future development of manufacturing. This is particularly true where gardens are located in the vicinity of rapidly growing cities. Foresight in this respect may mean the possible avoidance of ultimate abandonment or costly removal of the garden. Nearly all the older botanical gardens in this country are now completely enveloped by the expansion of population or are gradually being so enveloped. Where located in exceedingly large park areas the

growth of population around the areas may not be an immediate serious handicap to the successful conduct of gardens therein, but sooner or later the unnatural conditions of urban environment will deleteriously affect the well-being of many species of plants. The Missouri Botanical Garden has partially met this condition and made adequate provision for the future by securing a very large tract of land approximately forty miles outside the city. The zoning of modern cities will make decisions as to location more secure and reliable than was possible in past years.

Size of Site.

No rule can be laid down that will be a reliable guide with respect to the size of an area that should be secured for a botanical garden. Most of the gardens in connection with colleges and universities, where gardens are maintained primarily for scientific purposes, cover only a comparatively few acres. The Harvard University Botanical Garden has an area of seven acres. However, if the Arnold Arboretum of the university is considered in connection with this, the total area equals approximately two hundred and forty-seven acres. The Brooklyn Botanic Garden covers fifty acres and the Missouri Botanical Garden approximately seventy-five acres in the City of St. Louis, while outside the city a tract of about thirteen hundred acres has been purchased for an extension garden. The New York Botanical Garden comprises almost four hundred acres. If a garden is limited to growing of herbaceous plants and at the most to only a few trees and shrubs, and site or sites for the necessary structures, it is possible that a comparatively small acreage will suffice. If an extensive arboretum is included in the plan the acreage should be very much larger. With respect to the number of collections and the elaborateness of structural equipment, both of which will in a more or less degree determine the size of the area needed, the final determination, in the last analysis, is the amount of money which any community is willing to invest in capital outlays and operation and maintenance of a botanical garden.

Factors in Design.

Like all other areas comprehended within a modern park system a botanical garden must in its design be so arranged as to most readily facilitate the human use purposes for which it is intended. In general, this involves a system of paths and service driveways which will facilitate the movement of the people about the garden, with the exception of pure pleasure driveways which should be excluded; a systematic arrangement of plants both outdoors and indoors to facilitate their study both from a popular and scientific viewpoint; the location and erection of certain structures necessary for the propagation and care of young plants; the care of

plants which cannot be grown successfully outdoors; the housing of herbaria, museum specimens, laboratory equipment, library material, office equipment and such structures as residences, shop, power plant and storehouse, the whole design to be so arranged and constructed as to present a "tasteful and decorative landscape effect."

Quoting again from Dr. Britton:

"In placing the structures intended for the visiting public, considerations of convenient access, satisfactory water supply and the distribution of crowds must be borne in mind in connection with the landscape design. The planting should follow, as nearly as possible, a natural treatment, except immediately around the larger buildings, and at the entrances, where a considerable formality is desirable for architectural reasons. It is especially desirable that as much natural treatment as possible should be given to the areas devoted to systematic planting — herbaceous grounds, fruticetum, arboretum. The rectilinear arrangement of plant beds found in most of the older gardens has become abhorrent to landscape lovers, and the sequence of families desired can usually be quite as well obtained by means of curved-margined groups.

Much of the value and the success of a botanical garden arises from its influence in gratifying and developing the innate sense of beauty possessed to a greater or less degree by everyone, and in fostering among the people a taste for decorative plants and a desire to cultivate them. While the beauty of the decorative plants themselves satisfies this hunger for beauty to a large degree, the value and influence of the garden is all the greater if the ensemble effect of the whole and of parts of the garden is the result of the best work of the skilled landscape artist. A fundamental element in the design of a botanical garden is space (or spaces) set aside both outdoors and indoors for the growing and exhibit of plants of economic value. The display of economic plants may be effected by growing such of them as will exist without protection in the locality in a plot more or less individualized, while those too tender for cultivation in the open are grown in the greenhouse, either in a separate house or section, or scattered through the several houses or sections in the temperature best adapted to their growth.

The display of plant products, best accompanied by mounted specimens of the species yielding them, by photographs and plates, is accomplished by the economic museum where these are arranged in glass or glass-fronted cases suitably classified and labeled. It is believed that the most useful results are obtained by arranging this museum by the products themselves and thus not in biologic sequence, but by bringing together all drugs, all fibres, all woods, all resins; where the same product is used in more than one industry the exhibit may be duplicated, more or less modified, without disadvantage.

Whether plants are grown for a demonstration or illustration or a study of their economic value, or whether they are grown for an illustration of their decorative value, the success in either case depends very largely

upon the character and completeness of the scientific equipment and the quality and work of the scientific staff. 'Few valuable results can be reached in the investigation of economic plants and their products unless the scientific equipment is well developed. The two departments must work conjointly, both on account of the necessity of knowing just what species is under investigation, its structure, distribution and literature, and in order that the most approved and exact methods may be used in the research.' Likewise, 'the cultivation of decorative plants and especially the fostering of a taste for them, and the bringing of unusual or new species to attention and effecting their general introduction' is related fundamentally to the scientific department, for it is this department that must be relied upon 'for the accurate determination of these plants, information concerning their habits and structure, and suggestions regarding the conditions of their growth.'

The library, herbarium, museums, laboratories and experimental greenhouse or houses are the source whence exact information regarding the name, structure, habits, life processes, and products of plants are derived, and they are the more useful as they are the more complete and fully equipped. It is practically impossible for any one library to have all the literature of botany and related sciences, any one herbarium to possess authentic and complete representation of all species of plants, or any one museum to be thoroughly illustrative; absolute perfection along these lines cannot be obtained, but the more closely it is approximated the better the results. The research work of the scientific department should be organized along all lines of botanical inquiry, including taxonomy, morphology, anatomy, physiology and paleontology, and the laboratories should afford ample opportunities and equipment for their successful prosecution. The arrangement of areas devoted to systematic planting, and the proper labeling of the species grown, are important duties of the scientific department. The sequence of classes, orders and families is usually made to follow some 'botanical system.' It is highly desirable that this should be a system which indicates the natural relations of the families, as understood at the time the garden is laid out; and to be elastic enough to admit of subsequent modification as more exact information relative to their relationships is obtained. The weight of the present opinion is overwhelmingly in favor of an arrangement from the more simple to the more complex, and this will apply not only to the systematic plantations, but to the systematic museum and the herbarium."

The design of botanical gardens can best be illustrated by the plans of a few existing gardens in the United States. The following plans include the new plan of the Harvard Botanical Garden, the plan of the Arnold Arboretum, the Missouri Botanical Garden in St. Louis and the proposed developmental plan of the new site at Gray Summit, Missouri, and the New York Botanical Garden.

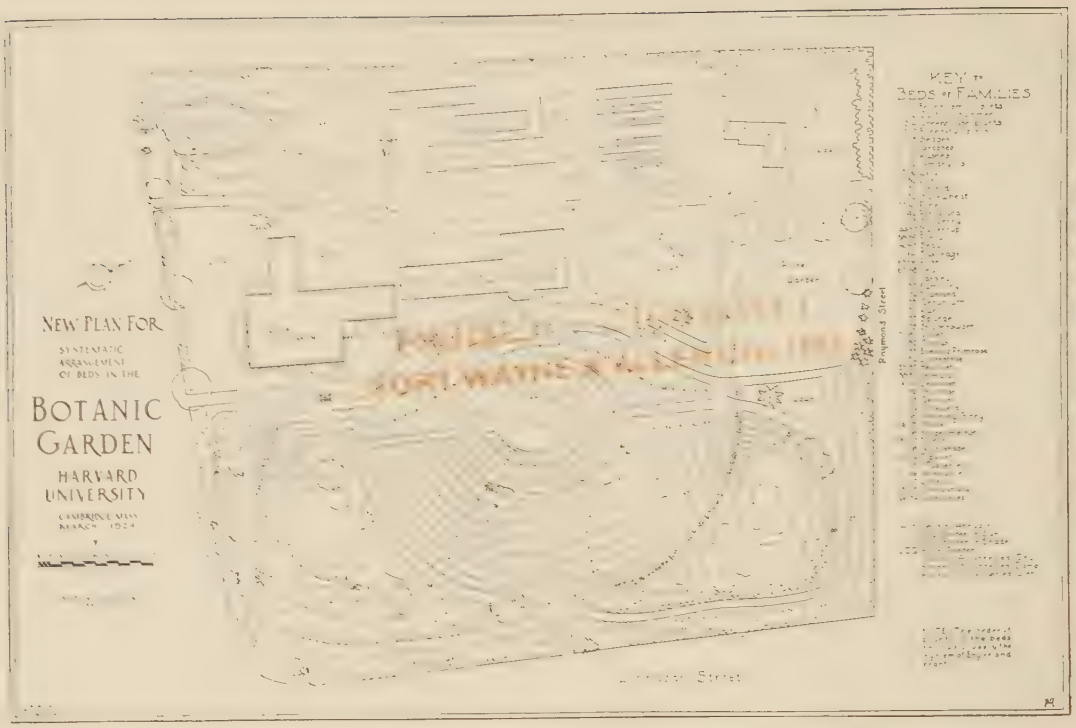

PLATE NO. 369

NEW PLAN FOR THE BOTANIC GARDEN OF HARVARD UNIVERSITY

(*Landscape Architecture*, Vol. XIV, No. 3, April 1924, pages 180–185 inclusive.)

"In this reconstruction, the old plan of the grounds will be little modified. The existing fine old trees and shrub groups will serve as a background for the herb plantings, or offer shade to those species requiring it. The first labors have been directed to the central beds (see numbered beds on plan) for a thorough preparation of the naturally heavy clay soil, and a resetting of the herbs in the order of Engler & Prantl. While this scientific order is of the first importance, the planting in each bed will be staged for artistic effect. The numbers in the key show the sequence of families in the beds. The annuals will be in the two central beds about the water lily pool, following the same order, but reducing upkeep by putting annuals and perennials separate. Hardy orchids and ferns are in the shade of the group of large trees, the lily family in wild garden arrangement under tall trees, and the iris in a long border for convenience of study. In all groups the staging is more pleasing than the plan would indicate. In all cases the plants most similar are planted close together, so far as soil conditions will allow. The greenhouses, as indicated, are in ten sections, giving conditions from tropical to cool and unheated. There is ample supply of frames to carry seedlings and half hardy plants over winter.

Besides this general plan, there is made a detailed plan of each bed showing the position of every plant, making the plant identification not wholly dependent on the labels. Each plant species, as existing on the

grounds or when received, is given a card of data, like a library accession card, filed in boxes with tab-cards of the genera. The annuals, perennials and greenhouse plants have separate boxes. For each also there has been made a checking list, like the Kew hand list, of all these plants in cultivation in America and those possible to introduce from other countries, the species being checked on these lists when the accession card is filled out. Thus at any time the presence of the plant in the collection can be verified, its history here reviewed, and its location indoors or in the beds discovered. For the convenience of the public a painted metal label is to be placed with each plant indoors and a green painted wooden label in the beds for each species outdoors. All these labels are costly and easily destroyed or misplaced; in case of doubt the gardener should be asked to refer to the office records, which already are complete to date, while the labels will never be quite completed.

The Harvard Botanic Garden was established in 1807 and has been in continuous existence since the date of its establishment. It covers an area of approximately seven acres. 'The methods of caring for the plant collection will follow largely those of the Arnold Arboretum, and the plants thus will supplement that great collection, giving this university a complete laboratory of plants grown in northern gardens, for use in botany, landscape architecture, horticulture and related studies. The present collection (1924) of some two thousand species will be increased rapidly to at least six thousand, while one thousand annuals will be grown. Of the possible ten thousand species of greenhouse plants there is room for perhaps one-third. It is planned to have all the materials of our American nursery catalogues, exclusive of hardy woody plants, in cultivation by a year hence, with as many of the rare plants as can be obtained.'" (Stephen F. Hamblin, Director of the Harvard Botanic Garden, *Landscape Architecture*, April 1924.)

Natural Features.

"The Arnold Arboretum occupies two hundred and forty acres of meadow, hill and valley. The ground rises gradually from the meadow at its northeastern end to the summit of Bussey Hill. From the top of Bussey Hill the ground drops abruptly to South Street on the south and on the southwest to the valley which crosses the arboretum from Centre Street to South Street and which, at the northern base of the second of the hills of the arboretum, Hemlock Hill, is joined nearly at a right angle by the valley through which the Bussey Brook flows from the northwest. Through the low land west of Hemlock Hill and separating it from the third and the highest of the arboretum hills, Peter's Hill, Bussey Street, a highway open to traffic, extends from Walter Street near its junction with Centre Street to South Street.

The collections of trees in the arboretum are arranged by groups of species which are called genera, and the genera, so far as it has been found practicable to do so, have been planted according to their botanical relationships into larger groups called families. In the case of important North American trees, that they may show their habit under different conditions,

PLATE NO. 370

PLAN OF THE ARNOLD ARBORETUM, JAMAICA PLAIN, MASSACHUSETTS

(Plan and descriptive material following from "A Guide to the Arnold Arboretum," by Charles S. Sargent, Director; second edition, 1925.)

a number of individuals are planted close together in a group, while at a distance from this species group sufficient to ensure it a full and free development of branches an individual of the species is planted. A representative of each genus of the trees in the arboretum stands near a drive, so that visitors passing along the arboretum roads may obtain a general idea of the groups of trees hardy in Massachusetts and of their relation to each other. Access to the groups is further secured by a system of grass-covered paths, which reach all parts of the arboretum and make easy the examination of the collections. An attempt has been made to place the groups of trees in positions where each tree may find favorable surroundings without interfering with the beauty of the hills and valleys of the arboretum and of the natural woods, which have been carefully preserved. The shrubs have been arranged primarily in a series of formal beds, and partly in large irregular groups of species planted along the drives as near as possible to the groups of trees of the same families.

Records and Labels.

A record of the origin and history of every species and variety of the trees and shrubs planted in the arboretum is kept in a card catalogue, and to each is given a number. When a species or variety is represented in the collection by more than one individual or lot of individuals, a different number is given to each additional individual or lot of individuals. The exact position of every tree planted in the arboretum is plotted on the sheets of a large scale map, and with these is kept the detailed history of each tree, so that it would be possible for a stranger to locate every tree in the collection, even if the labels were lost.

Labels giving their Latin and English names and the region which they inhabit are placed at the height of the eye on the trunks of prominent native trees standing near drives and walks, and these labels will be found on the trunks of many of the planted trees in the different groups. Labels with raised or painted letters are used for the plants in the shrub collection and for shrubs and small trees near some of the walks. Wooden stakes giving their names are placed before many shrubs and small trees; and on every plant, whether otherwise labeled or not, a small zinc label will be found giving name and number, unless, as too often happens, it has been willfully removed by visitors.

The Administration Building.

This building contains the library and herbarium of the arboretum, the administrative offices and laboratories and a collection of the woods of North American trees. The library, which contains about thirty-two thousand bound volumes and eight thousand pamphlets, more or less devoted to trees and their cultivation, and the herbarium representing the woody plants of the world, may be consulted by students.

The Nursery and Propagating Department.

The propagating department and principal nursery of the arboretum are on Prince Street near the corner of Centre Street, not far from the Jamaica Plain entrance to the arboretum. Here is a greenhouse with a

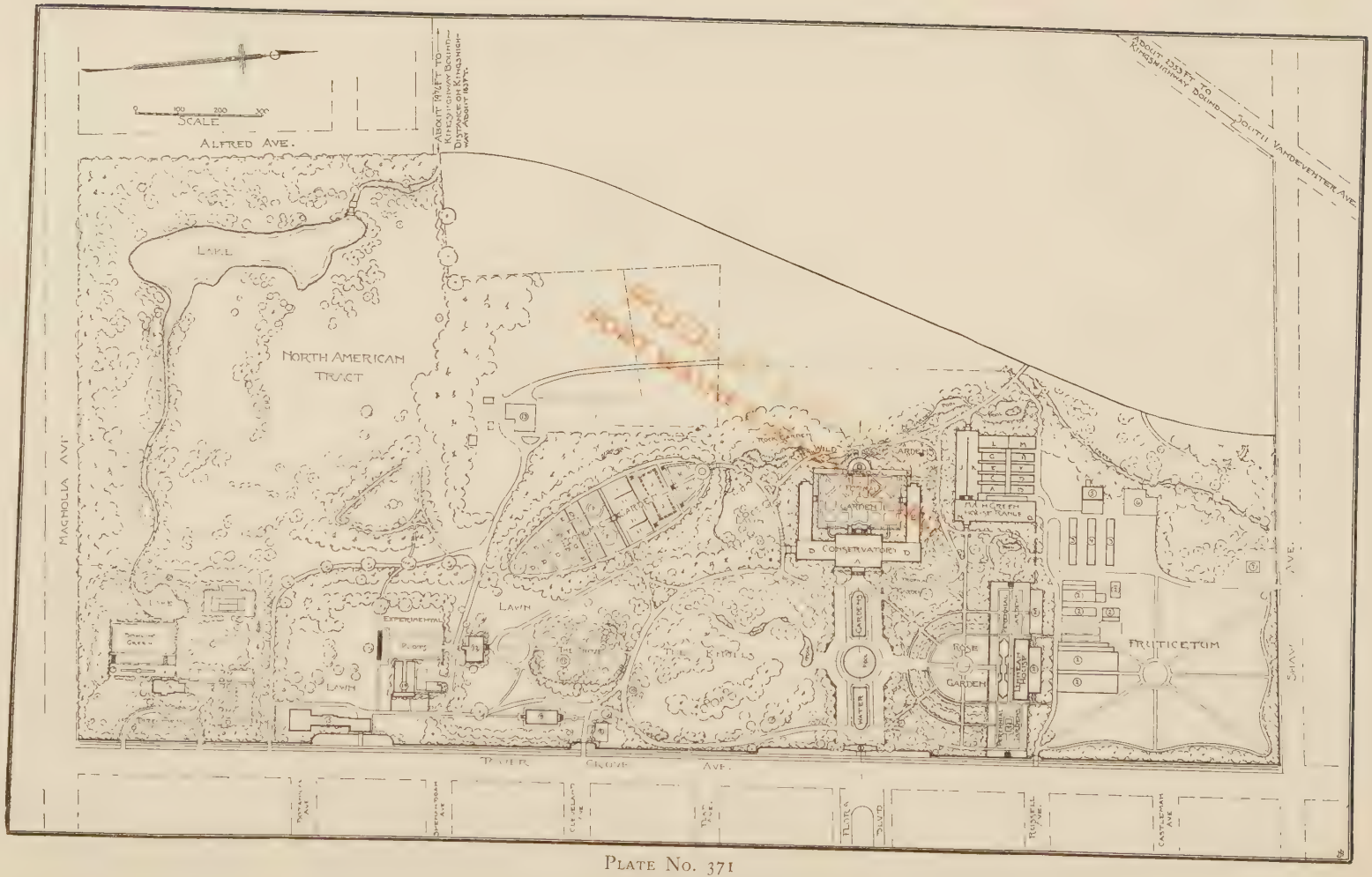

PLATE NO. 371

PLAN OF THE MISSOURI BOTANICAL GARDEN, ST. LOUIS, MISSOURI

("Missouri Botanical Garden, Illustrated," pamphlet published by the Board of Trustees of the Missouri Botanical Garden.)

cold pit and frames especially designed for the propagation of trees and shrubs. Here, too, is the collection of alpine and other small shrubs which cannot be successfully grown in the open ground of the arboretum. In this nursery seedlings of new and rare plants can always be seen."

EXPLANATION OF MAP, MISSOURI BOTANICAL GARDEN

1. Entrance Gate.

2. Private Growing Houses. These houses are used for growing the plants for the floral display house and the outdoor gardens. Not open to the public.

3 and 4. Service Sheds. Not open to the public.

5. Power House.

6. Coal Storage Pit.

7. Engineer's Residence.

8. Cleveland Avenue Gate House. Not open to th public.

9. Museum. An exhibit of economic fungi, principally those causing tree diseases and timber rots, is maintained on the first floor of this building. Open only on special occasions.

11. Mausoleum. The burial place of Mr. Henry Shaw, the founder of the garden.

12. Mr. Shaw's Country Residence. This building was erected by Mr. Shaw in 1849, and was used by him as a country residence. From the death of Mr. Shaw, in 1889, until 1913, this building was used as the residence of the Director. At present it is occupied by the School for Gardening (1926). Not open to the public.

14. Experimental Greenhouses. Houses used exclusively for experimental work by students in the research laboratory. Not open to the public.

15. Herbarium, Laboratory, Library and Office. Not open to the public.

16. Director's Residence.

OUTDOOR COLLECTIONS

Water gardens. A formal garden composed of three pools filled with hybrid water lilies forms the feature display of the garden during the summer months. Night and day bloomers are represented as well as the giant water platters (Victoria).

Rose garden. A very attractive garden separated from the water garden by a shrubbery plantation. The entire garden except for the north side is outlined by a border of hawthorn. Several hundred varieties of roses.

Iris garden. Adjoining the rose garden on the north side is the iris peony collection. The central feature of the garden is the Linnean House in front of which are located pools filled with native and Japanese types of nelumbiums.

Formal garden. This garden is situated in a quadrangle formed by the palm house, the cycad house, the succulent house and the pergola. During the spring the grounds are devoted to a tulip or a pansy display, which is later replaced by pattern bedding of tropical foliage plants. The geometrical design of beds is outlined by a low privet hedge, and flower boxes and vases are placed at termination of walks.

The knolls. This is a large tract informally arranged and planted with a variety of trees, shrubs, herbaceous perennials and annuals. A series of pools abound with numerous water-loving plants, among which are the cat-tails, water hyacinth, water lettuce, water poppy and hardy water lilies.

Economic garden. As the name implies, this garden is devoted to a display of economic plants. Upon the southernmost terrace are grown farm crops, savory herbs, bee plants, and lawn and ornamental grasses. Another terrace is occupied by four model backyard gardens. Various hedges and fruits are included in the third terrace. Along the main walks are trained fruit trees, with numerous vines and flower beds at the sides.

Medicinal garden. Including some seventy-two families and over two hundred species of plants to be found mentioned in the pharmacopœia. As nearly as possible the garden is a replica of the Chelsea Physic Garden, the plan followed having been prepared by John Hays in 1753.

North American tract. This large tract is devoted to trees and shrubs indigenous to North America and hardy in St. Louis. The plants are grouped in families, thus rendering the collection of particular service to those teaching elementary botany.

Wild garden. A collection chiefly of Missouri wild flowers, comprising some four species.

Test garden. In order to afford the public an opportunity of seeing the various novelties as they appear in the trade lists of seedsmen a test plot has been established near the south end of the garden which contains each year a number of novelties offered by growers both in this country and abroad.

INDOOR COLLECTIONS

The Conservatory

The palm house. Contains a collection of palms embracing one hundred and fifty species, including such commercially important forms as date, cocoanut, sugar, panama hat and rattan palms. Other exotic tropical plants of interest are bamboo, traveler's tree, screw pine, oil palm, thatch palm, etc.

Economic house. A varied collection of tropical and

subtropical plants of special economic importance is housed in this conservatory. In the assortment are plants which produce rubber, oils, perfumes, fiber, spices, drugs, woods, dyes, coffee, tea, pepper, guava, loquat, jasmine, ginger and patchouli. The vestibule of this house contains a group of the so-called "sensitive" and "telegraph" plants.

Cycad house. Arranged in Japanese style, this conservatory serves admirably as a display house for the representatives of all known genera of cycads, including forty species. The well-known Kafir bread and a very interesting genus, Bowenia, with fern-like foliage and lack of aerial stem are a part of the collection. Araucaria, Hakea, Eucalyptus, Taxodium, and other tropical evergreens add the desired touch to the house.

Succulent house. The arrangement in this house represents desert conditions under which the agaves (century plants), aloes, euphorbias, yuccas, cacti, and other closely related plants grow to perfection. Among the commoner plants are the night-blooming cereus, the giant cereus, the fish poison tree, Adam's needle, the hedgehog cactus, ice plant, sisal hemp and pulque plant.

Fern house. Upon the banks of a stream which flows through this house are grown numerous species of ferns and their allies. From the bridge which arches the ravine a good view of the entire collection may be obtained, and passing underneath this bridge through a grotto is a path which enables one to see at close range the plants viewed from above. The Boston ferns, bird's-nest fern, maidenhair fern, and climbing fern are some of the widely known representatives of the fern group in this house.

Main Greenhouse Range

Floral display house. One end of this large conservatory is occupied by a banana dome, while the rest of the house is devoted to a series of floral displays. The most popular of these is the chrysanthemum show in the fall, which is followed by exhibits of orchids, poinsettias, bulbous plants, primroses, cyclamens, azaleas, rhododendrons, roses, calceolarias, hydrangeas, gloxinias, tuberous begonias, fancy-leaved caladiums, etc., the design changing with the exhibit.

Aroid house. Leading down a flight of stairs from the floral display house is an artistically arranged conservatory, accommodating a collection of epiphytes and terrestrial aroid plants. Indian ginger (Alpinia nutans), Monstera, rattlesnake plant (Calathea Crotalifera), dumb-cane and others are grouped around a waterfall and its connecting series of pools, and hanging over the pools are numerous pitcher plants. Upon the north side of the house four alcoves are devoted to a display of aquatic plants, shown in aquaria containing tropical and native fish. Here also are to be found blooming orchids when the annual orchid show is not staged in the floral display house.

Tropical fruit house. This house contains citrus fruits (orange, lemon, pomelo, kumquat in variety), papaw, mango, mangosteen, alligator pear, Japanese persimmon, sapodillo plum.

Bromeliad house. The pineapple and its relatives compose the chief display in this house, and Spanish moss, epiphytic upon trees in Florida, is grown abundantly. Interesting features to be seen here are the vanilla plant, trained upon a trellis at one end, and the goose plant, which when in bloom during the summer attracts numerous carrion flies by its peculiar odor.

Forced fruit house. The central panel of the house is devoted to peaches, nectarines, cherries and other fruit, trained upon espaliers. Along the sides are planted various types of forcing grapes, covering the sides and the roof of the house.

Orchid growing houses (not open to the public). Owing to the peculiar culture requirements of orchids, the construction of these special houses was necessitated to accommodate the thousand representative species from all parts of the world. The collection is particularly rich in Vanda, Cypripedium, Epidendrum (which furnish the main orchid displays), and of common interest are Cattleya orchids, lady slipper, star of Bethlehem, bucket, dove, moth, nun, butterfly, spider, braided and monkshood. The collection has been made the peer of any in this country through the donation by the late D. S. Brown of Kirkwood, Mo., of many rare types, and the result of the recent expedition to South America for orchids.

Linnæan House

The only greenhouse remaining which was built during Mr. Shaw's lifetime, and so named because of the bust of Linnæus placed over the main doorway, has been converted now into an ericaceous and coniferous house. Along the banks of the dell are planted azaleas, camellias, ericas, kalmias and rhododendrons, as well as numerous cone-bearing trees. The central feature is rocky ledge from which a spring issues, the structure being surmounted by an overhanging rock and stump of a tree.

The Missouri Botanical Garden comprises about seventy-five acres. It was opened to the public by Mr. Henry Shaw about 1860. From that date until the death of Mr. Shaw in 1889, the garden was maintained under the personal direction of its founder, and while virtually a private garden, it was, except at certain stated times, always open to the public. By a provision of Mr. Shaw's will, the garden passed at his death into the hands of a board of trustees and has continued to this day (1927) under this form of government.

In an article in the July-August (1926) edition of *Parks and Recreation*, Mr. Noyes says:

"A little over a year ago the Missouri Botanical Garden purchased a tract of land of some thirteen hundred acres, located at Gray Summit, Missouri, which is approximately thirty-seven miles west of the city limits of St. Louis. As is well known, it is getting to be more and more difficult

PLATE NO. 372

PRELIMINARY PLAN OF THE NEW SITE OF THE MISSOURI BOTANICAL GARDEN, GRAY SUMMIT, MISSOURI

(Design by John Noyes, Landscape Architect for the Missouri Botanical Garden. Plate furnished by *Parks and Recreation*.)

to grow even the more common deciduous trees and shrubs at the main site of the Missouri Botanical Garden, which is almost in the heart of the City of St. Louis. Practically no evergreens will stand the smoke and gases of this locality, and many of the greenhouse plants are seriously affected.

The new tract at Gray Summit is typical of eastern Missouri, and is one of great natural beauty and of many diverse conditions. Along the Meramec River at the south is a wide belt of table-land which is occasionally overflowed by the river. To the north of this is a large tract of several hundred acres of rugged topography mostly in steep bluffs and ravines, heavily wooded, and with a great variety of plant life, the notable characteristic being the numerous cedar growths among the deciduous types. North of the bluff and ravine lands are some eight hundred acres of gently rolling land containing several large timber tracts, the greater part of this area, however, being devoted at the present time to agricultural uses. In preparing a general plan of development for this tract, the probabilities that it would some day be the main establishment of the Missouri Botanical Garden have been kept in mind. The main horticultural and botanical divisions into which the property will be portioned are as follows:

1. The service and experimental garden areas.
2. The pinetum for a conifer collection.
3. The collections of exotic trees and shrubs.
4. The areas devoted to North American trees and shrubs.
5. The main display grounds, which will include the more formal flower gardens and the naturalistic areas devoted especially to floral effects.
6. The bluff and ravine lands which, it is expected, will be devoted entirely to native plants.
7. The lower river lands which will be devoted partly to native plants and partly to nut orchards.

In addition to these main divisions in area some four hundred acres on the borders of the property are reserved for uses other than for botanical garden purposes."

EXPLANATION OF MAP

1. Public conservatory range 1.
2. Water lily tanks.
3. Elevated railway station.
4. Power House No. 1.
5. Bedford Park entrance.
6. Botanical Garden station.
7. Mosholu Parkway entrance.
8. Museum building.
9. Pinetum.
10. Flower gardens.
11. Southern Boulevard entrance.
12. Herbaceous Garden.
13. Pergola.
14. Morphological Garden.
15. Economic Garden.
16. Viticetum.
17. Deciduous woodlands.
18. Hemlock forest.
19. Gorge of the Bronx River.
20. Gorge Bridge.
21. Waterfall.
22. Boulder Bridge.
23. Long Bridge.
24. Lower lake.
25. Water garden.
26. Lake Bridge.
27. Upper lake.
28. Lakeside shelter.
29. Fruticetum.
30. Woodlawn Road entrance.
31. Salicetum.
32. North Bridge.
33. Bronx River.
34. River woodlands.
35. North meadows.
36. Bronx River Parkway entrance.
37. Deciduous arboretum.
38. Power House No. 2.

39. Public conservatory range 2.
40. Allerton Avenue entrance.
41. Stable.
42. Propagating houses.
43. Nursery and experimental gardens.
44. Arboretum entrance.
45. Long Lake.
46. Rose garden.
47. Mansion.
48. Park department barn.
49. Park department band stand.
50. Park department shop.
51. Park department greenhouses.
52. Picnic grounds.
53. Mansion entrance.
54. Linnaean Bridge.
55. Linnaean Bridge entrance.
56. Iris Garden entrance.
57. Iris Garden.
58. White pine plantation.

Location of Garden.

The New York Botanical Garden is situated in the northern part of Bronx Park, north of Pelham Avenue, the reservation including nearly four hundred acres of land of a very diversified character, furnishing natural landscapes of great beauty and variety.

A. Buildings. The principal buildings open to the public are:

1. The largest botanical museum building in the world, located near

PLATE No. 373. GENERAL PLAN OF THE NEW YORK BOTANICAL GARDEN, 1920

(Plan from "Descriptive Guide to the Grounds, Buildings, and Collections," published by the New York Botanical Garden, edition of 1920)

the Botanical Garden station of the New York Central Railroad and the Mosholu Parkway entrance. This building includes, in addition to the museum exhibits on the main floors, a large lecture hall for public lectures in the basement; and the library, laboratories for instruction and research and the herbarium on the upper floor.

2. Conservatory Range 1, a large and handsome glass house located near the elevated railway station and containing plants from tropical regions.

3. Conservatory Range 2, a similar building situated on the eastern side of the garden near the Allerton Avenue entrance.

4. The mansion, a stone house built by the Lorillard family in 1856, stands on the east side of the Bronx River, above the waterfall. It contains meeting rooms, board rooms, horticultural laboratories, a lecture room, the collections of the Bronx Society of Arts and Sciences, the office of the Secretary of the Horticultural Society of New York, and the shops of the garden, which are in the basement.

B. Systematic plantations. Containing plants arranged in botanical sequence for comparative study.

5. The pinetum, or collection of cone-bearing trees, mostly evergreens, brought together on the hills and slopes on all sides of the conservatory range 1, and in the space between that structure and the museum building. The young white pine, red pine and white fir plantations are located south of the herbaceous garden, near the Victory Grove of Douglas spruce trees.

6. The deciduous arboretum, or collection of trees which lose their leaves in the autumn, located along nearly the entire eastern side of the grounds from Pelham Avenue to Williamsbridge. The salicetum, or collection of willows, occupies several acres on both sides of the river at the north end of the grounds.

7. The fruticetum, or collection of hardy shrubs, located on the plain northeast of the museum building at the Woodlawn Road entrance and extending northward into the north meadows; this collection is also arranged by botanical relationship. The viticetum, or collection of shrubby vines, is in the edge of the forest east of the economic garden, not far from the museum building.

8. The herbaceous garden, situated in the valley east of conservatory Range 1, near the southern boulevard entrance, containing collections of hardy herbaceous plants arranged by botanical relationship.

9. The morphological garden, just north of the herbaceous garden, designed to illustrate forms of plants and plant structures studied in elementary botany.

10. The economic garden, adjoining the morphological garden on the north, containing groups of hardy plants whose products are directly useful to man.

C. Horticultural plantations. Containing plants that may be used for decorative purposes. The systematic plantations also contain a number of such plants.

11. Decorative woody plants in groups along the roads and paths and in various parts of the grounds, consisting of conifers, rhododendrons, flowering shrubs, magnolias, etc.

12. The Japanese cherry collection, in the valley between the river and conservatory range 2, containing over a hundred trees that flower every spring.

13. The rose garden, an area of over an acre located in the valley west of Long Lake and not far from the Pelham Parkway Station of the subway. Several hundred varieties of the finest roses are in bloom there from early summer to autumn.

14. The lilac garden, situated south of the rose garden on Pelham Parkway and containing a good representation of single- and double-flowered varieties.

15. Flower gardens containing a great variety of plants in bloom from early spring to late autumn. These are chiefly located in the vicinity of conservatory range 1 and the elevated railway station.

16. Horticultural collections, situated south of the herbaceous garden and containing collections of cannas, phloxes, gladioli, rose mallows and plants having variegated or colored foliage.

17. The dahlia collection, in the west border north of the Harlem railway station, containing several hundred of the best varieties to be obtained.

18. The iris collection, or iris garden, situated in the extreme southwestern corner of the grounds where Pelham Parkway and the southern boulevard meet.

19. The water garden, northeast of the museum building, containing water lilies and other aquatic plants.

D. Natural features. In addition to these artificial features, the following natural features are noteworthy:

20. The hemlock forest, a grove of the Canadian hemlock spruce, clothing the hills between the museum building and the Bronx River and covering about forty acres, considerable portions of it being primeval.

21. The gorge of the Bronx River, extending south from the waterfall at the Mansion, along the edge of the hemlock grove. The river plunges through its gorge in a series of rapids passing into quiet waters before it leaves the garden under the Linnæan Bridge.

22. The north meadows and river woods along the Bronx River from the northern end of the hemlock grove to the northern end of the garden.

23. Deciduous woodlands on rocky ridges in the southern and central parts of the reservation.

E. Park features.

24. Entrances.
25. Roads and paths.
26. Bridges.
27. Water supply and drainage.
28. Shade trees and border screens.
29. Shelters and pergolas.

The Administration of Botanical Gardens in the United States

For the most part the principal botanical gardens in the United States are under the administrative control of private corporations, Buffalo being the only exception. Here the botanical garden was founded directly by a park department and maintained as an integral part of the park system to the present day. Park departments have, on the whole, contented themselves with the development and maintenance of general landscape gardening, or with special types of gardens, or with the operation and maintenance of a conservatory, although there are comparatively few of the latter publicly owned in the United States.

The Harvard Botanical Garden and the Arnold Arboretum are under the administrative control of the president and fellows of Harvard University, although in the case of the arboretum the City of Boston through its park and recreation department contracted with the president and fellows of the university to grant additional land, construct and maintain a system of driveways and walks, pay any taxes that may be levied against the property of the arboretum and police the property.

The Missouri Botanical Garden is governed by a board of trustees. As early as 1859 Mr. Shaw, the founder and donor of the garden, "secured the passage of an act by the Legislature of the State of Missouri which empowered him to deed or will, as he might elect, such of his property as he wished, to trustees for the maintenance of 'a botanical garden for the cultivation and propagation of plants, flowers, fruit and forest trees, and for the dissemination of the knowledge thereof among men, by having a collection thereof easily accessible; by the establishment of a museum and library in connection therewith, as also by the establishment of public lectures and instruction upon botany and its allied sciences, when it shall be deemed advisable in furtherance of the general objects of said trust; and . . . for the purpose of maintaining a perpetual fund for the support

and maintenance of said garden, its care and increase, and the museum, library and instruction connected therewith.' When he died in 1889 his will was found to provide for the administration of the garden by an independent board of trustees, consisting of fifteen persons; ten named by the testator, and the other five holding office as trustees *ex officio*, in various capacities: The chancellor of Washington University, the bishop of the Episcopal Diocese of Missouri, the president of the Public School Board of St. Louis, the president of the Academy of Science of St. Louis and the mayor of the city. Except for the members *ex officio* the board of trustees is a self-perpetuating body, itself filling vacancies as they occur." ("The Missouri Botanical Garden," by William Trelease, LL.D. Reprint from the *Popular Science Monthly*, January 1903.)

The Brooklyn Botanical Garden is under the administrative control of a committee of the board of trustees of the Brooklyn Institute of Arts and Sciences. This committee is known as the governing committee of the Botanical Garden and consists of twelve appointive members and one *ex officio* member, the latter being the president of the board of trustees. The mayor of the City of New York, the president of the Borough of Brooklyn, and the commissioner of parks, Borough of Brooklyn, are *ex officio* members of the board of trustees of the institute.

The National Botanical Garden, Washington, D. C., is under the administrative control of the Library Committee of Congress.

The various botanical gardens maintained by universities and colleges are administratively under the governing authorities of the several institutions respectively.

There are two sets of administrative agents for the government of the New York Botanical Garden. The first of these is known as the Scientific directors, composed (as fixed by the legislative act of incorporation) of the president of Columbia College, the professors of botany, of geology and of chemistry therein, the president of the Torrey Botanical Club and the president of the Board of Education of the City of New York. These are all also *ex officio* members of the New York Botanical Garden Corporation.

The scientific directors have control of the scientific and educational departments of the corporation and the appointment of the director in chief of the garden. The scientific directors may add to their number new members, from time to time, by a majority vote of the existing directors approved by a majority vote of the board of managers of the corporation.

The second administrative authority is the board of managers, composed of the scientific directors, the mayor of the City of New York, the president of the board of park commissioners of the department of public parks, and at least nine other members elected by members of the cor-

poration. The terms of office of the elective members overlap, three being elected annually. The corporation has the power to increase the number of elective members. All business and affairs, including the financial management of the corporation, aside from the duties specifically delegated to the scientific directors, are under the control of the board of managers.

As do public administrative authorities, these private-public administrative agencies have the power to draft and adopt rules and regulations for the government of their activities, draft and adopt rules for the guidance of the people in the use of the properties and facilities and to define the duties of the executive officers. In the case of all these forms of private corporate control the administrative authorities have the right to elect their own officers. The officers are usually a president, one or more vice-presidents, a treasurer and a secretary. Neither the members of the administrative boards nor the officers receive any compensation for their services.

Some of the advantages of these various forms of private-public control of such an institution as a botanical garden may be stated as follows:

1. It secures the direct and active interest of a considerable body of citizens who are personally interested in the work.

2. It ensures a continuous sequence of interest and stability in policies and plans which is very difficult to maintain under modern tendencies in municipal government where changes in governing authorities are becoming more and more frequent.

3. It permits a wide range of permanent affiliations with public and private institutions, the interests of which are in some way related to the purposes and work of the corporation.

4. Through memberships of different classes not only a fairly wide and direct personal interest is secured but this becomes an important means of supplementing any public funds which may be secured for the work. Because of the character of the service rendered by a botanical garden, persons of means are not only often interested as members and officers but also become willing to give sums of money for specific purposes and for general endowment. The average American while whole-heartedly believing, theoretically at least, in the value and rightness of the system of popular government, often prefers to give money or other property for public services to a private-public corporation rather than to municipal corporations directly, for he knows that its administration will not be subject to changing political conditions.

5. There is likely to be more flexibility and greater freedom in handling funds and in formulating and carrying out policies and plans under private-public administration than under municipal control, where there of necessity must be very strict interpretation of functions and limiting rules as to

use of funds. Scientific investigation and experimental work that may or may not lead to "practical" results is a part of the very spirit of the work of a botanical garden. It would be very difficult for a governing authority or any executive officer to explain to a narrow-minded citizen who desired to create trouble, why money and effort had been expended without any visible result to his practical mind.

6. A very important reason of the value of private-public control of such an institution as a botanical garden is to be found in the nature of the work and the character of the services to be rendered.

The nature of the work requires scientific attainments of a very high order in the various fields of knowledge relative to plants. A greater degree of intelligent understanding and sympathy with these requirements is more likely to be found among the membership and officers of a private-public corporation than among the average municipal administrative authorities. The members and officers of the corporation are more likely to appreciate the fundamental necessity of securing a highly trained and experienced chief executive officer and a scientifically trained staff than would be the case under direct municipal control where frequently questions of political affiliations enter into appointments.

The character of the services rendered are largely instructional in nature based upon scientific knowledge. It is of the highest importance that the staff be selected because of their scientific attainments and be completely free from any possible political influences and entanglements if they are to do their best work both in the handling of the garden as such and in the instructional service to the people.

On the other hand all these possible advantages are not impossible of attainment under direct municipal control. Municipal authorities have handled and are handling efficiently small and large trust funds and properties given for various public purposes; it is possible, under direct municipal governmental control to secure the direct interest of responsible citizens in various public projects; it is possible to use *ex officio* officials on various public administrative boards and it is possible to secure the necessary trained executive officials to handle public services demanding scientific knowledge and a high quality of executive ability irrespective of political affiliations.

Executive Organization

To a very large degree the form of the executive organization of a botanical garden will be determined by the stated objectives and purposes of the garden. In the act of incorporation of the New York Botanical Garden the objectives and purposes of the garden are stated as follows:

"For the purpose of establishing and maintaining a botanical garden and museum and arboretum therein, for the collection and culture of plants, flowers, shrubs and trees, the advancement of botanical science and knowledge, and the prosecution of original researches therein and in kindred subjects, for affording instruction in the same, for the prosecution and exhibition of ornamental and decorative horticulture and gardening, and for the entertainment, recreation and instruction of the people."

Out of the attempts to realize these objectives the various departments, and the types of staff members connected therewith, of the present executive organization of the garden have gradually developed. The principal staff members as of 1925 are as follows (Bulletin of the New York Botanical Garden, June 3, 1925):

Director in chief.
Assistant director.
Head curator of the museum.
Honorary curator of the economic collections.
Honorary curator of mosses.
Three curators and two associate curators.
Director of the laboratories.
Technical assistant to the director of the laboratories.
Librarian.
Bibliographer.
Honorary custodian of local herbarium.
Paleobotanist.
Artist.
Head gardener.
Head gardener's assistant.
Two foremen gardeners.
Gardeners.
Laborers.
Custodian of herbaceous grounds.
Landscape engineer.
Administrative assistant.
Clerk and accountant.
Superintendent of buildings and grounds.

Mr. Henry Shaw, founder of the Missouri Botanical Garden, stated in his will the purposes of the trust which he established, as follows: "Having for the use of the public a botanical garden easily accessible, which should be forever kept up and maintained for the cultivation and propagation of plants, flowers, fruit and forest trees, and other productions of the vegetable kingdom; and a museum and library connected therewith, and devoted to the same and to the science of botany, horticulture and allied objects."

Provisions were also made for the establishment of public lectures on botany and allied sciences; for making additions to the collections of plants, the museum and the library; for exchanges; for increase in the means and appliances of instruction, and for the maintenance of the revenue, up to a certain point, of the school of botany which had been established in connection with Washington University. The instruction of garden pupils is specifically indicated as a purpose of the institution, and among the subjects that are mentioned (in the will) as forming a part of the purposes of its founder are horticulture, arboriculture, medicine and the arts, so far as botany enters into them, and scientific investigations in botany proper, vegetable physiology, the diseases of plants, the forms of vegetable life and of animal life injurious to vegetation, and experimental investigations

in horticulture, arboriculture, etc. He also specifically stated that he considers it "an important feature to always keep up the ornamental and floriculture character of the garden." ("The Missouri Botanical Garden," William Trelease, LL.D. Reprint from the *Popular Science Monthly*, January 1903.)

The efforts to carry out as many of these objectives as possible has given rise to the executive staff organization of the Missouri Botanical Garden, the principal members of which (1924) were as follows:

Director.
Secretary to the director.
Physiologist in charge of graduate laboratory.
Pathologist.
Curator of herbarium.
Mycologist and librarian.
Geneticist.
Research assistant.
Editor of publications.
Floriculturist.
Landscape designer.
Director of school for gardening.
One employee for each of the following:
  Exotics.
  Aquatics.
  Orchids.
  Herbaceous and nursery.
  Inside floral display.
  Outside floral display.
Plant recorder.
Construction and farms.
Engineer.
Assistant engineer.
Carpenter.
Painter.

The purposes of the Brooklyn Botanical Garden, as stated in the act of Legislature (May 18, 1897), providing for an agreement between the City of New York and the Brooklyn Institute of Arts and Sciences for the coöperative establishment and maintenance of a botanic garden in Brooklyn, are as follows: ". . . for the establishing and maintaining . . . a botanic garden and arboretum for the collection and culture of plants, flowers, shrubs and trees, the advancement of botanical science and knowledge, and the prosecution of original researches therein and kindred subjects; for affording instruction in the same, and for the prosecution and exhibition of ornamental and decorative horticulture and gardening and for the entertainment, recreation and instruction of the people."

Both in this act and in the subsequent agreement entered into between the City of New York and the Brooklyn Institute of Arts and Sciences special emphasis was placed upon scientific research and education, although the importance of entertainment and recreation was recognized. In the furtherance of the above aims and purposes there has gradually evolved an executive organization composed largely of scientists and educational specialists together with a staff of business and service employees. The principal members of the staff are as follows (Report of the Brooklyn Botanic Garden, 1926):

Director.
Curator of plants (2).
Curator of plant pathology.
Curator of plant breeding and economic plants.
Honorary curator of Japanese gardening and floral art.
Curator of elementary instruction.

Assistant curator of elementary instruction.
Curator of public instruction.
Instructors (2).
Curatorial assistants (5).
Librarian.
Assistant librarian.
Resident investigator.
Research assistants (2).
Consulting landscape architect.
Photographer.
Secretary and accountant.
Assistant secretary.
Business office assistant.
Registrar and custodian.
Membership secretary.
Secretary to the director.
Stenographers (2).
Foremen gardeners.
Gardeners.
Foreman of laborers.
Laborers.

Appointments to all positions are made by the director of the garden with the approval of the Botanic Garden Governing Committee of the Brooklyn Institute of Arts and Sciences. In relation to the executive organization the governing authority, whether of a private-public corporation or a municipal park department, has the important direct duty of selecting a director, defining his duties and laying down general plans and policies respecting types of functional services. It is hardly necessary to say that the success of any botanical garden depends almost wholly upon the scientific qualifications and the administrative ability and social vision of the person selected as director. When a director has been selected he should be given a free hand to organize and develop the work, select his staff (subject to the approval of his governing authority), lay down rules for their guidance and govern their work.

Mr. Henry Shaw (Missouri Botanical Garden) included an interesting provision in his will to the effect that there shall always be a director of the garden, appointed and subject to removal by the board of trustees, by whom his duties are from time to time to be prescribed, but who, "when within the sphere of his duties thus prescribed and while he shall faithfully perform those duties thus prescribed . . . shall not be subject to the interference, management or control of said board." ("The Missouri Botanical Garden," William Trelease, LL.D. Reprint from the *Popular Science Monthly*, January 1903.) While the construction of this provision cannot be taken so literally as to deprive the governing authority of the actual control of the institution, Mr. Shaw's idea is so wise from an executive viewpoint, that it should not only be adopted as a cardinal principle by all governing authorities of botanical gardens but also by all governing authorities of park systems.

It has already been noted that the selection of the director in chief of the New York Botanical Garden is not made by the board of managers of the corporation but by the scientific directors, the presumption being that the membership of this directorate are better qualified to select a suitable director than those who were not so closely in touch with the scien-

tific and instructional requirements of the position. The director in chief is empowered by law to appoint his first assistant and chief gardener and be responsible for the general scientific conduct of the institution. The law further states that "all other business and affairs of the corporation, including its financial management, shall be under the control of the whole board of managers."

The regulations for the office of the director in chief as laid down by the scientific directors and board of managers are as follows:

1. The director in chief is the executive officer of the garden, and is responsible to the board of managers, and to the scientific directors, for the general management and control of all departments. He shall promptly and efficiently carry out all regulations and directions, and be responsible for the proper maintenance and good order of the buildings and grounds.

2. He may from time to time make recommendations for the development and management of the garden in all its departments, including the laying out of the grounds, the construction of buildings and the conduct of the museums, the herbarium or any of the departments of the garden, accompanying the same by his estimate of the probable cost thereof.

3. He shall recommend the employment of such persons as shall be needed for the various departments of the garden and have power to remove all employees, except those upon a yearly salary. All such salaried employees he shall have power to suspend and, on approval of the appropriate committee or board, to discharge.

4. He shall make all necessary purchases of tools, implements and supplies for the garden as authorized, and shall be responsible for the proper inventory, care and use of the same.

5. He shall examine, correct and certify all bills incurred under his management and shall keep, in books provided for that purpose, an accurate account of his expenditure of all appropriations made for garden purposes, which books, together with proper vouchers, shall at all times be open to inspection by members of the board.

6. He shall keep a copy of his official correspondence.

7. He shall use diligent efforts to build up the garden herbarium, the library and the museum, and the collections of living plants and trees, by correspondence, by exchanges of duplicates not needed, and by purchases, so far as means therefor are placed at his disposal.

8. He shall report to the board of managers, the scientific directors, or special committees, in such manner and at such times as they may direct.

9. He shall make no expenditures and incur no liabilities, except under appropriations made by the board.

10. He shall devote his whole time and energies to the promotion of

the garden interests, and shall not engage in any outside work except with the approval of the board or the executive committee.

Policing

It is quite to be expected that in a botanic garden filled, as it is, with so many interesting and beautiful plants and flowers, unscrupulous visitors will from time to time attempt to help themselves, may try to engage in activities not in harmony with the best interests of the garden or will enter the garden at times when attendants are not present. It is necessary, therefore, for the governing authority to make certain rules and regulations for the government and guidance of the people in the use of the garden and to make some provision for enforcing these rules and regulations. The following rules and regulations for the use of the New York Botanical Garden is an excellent example of such rules:

1. The picking of flowers, leaves, fruits, nuts or the breaking of branches of any plants, either wild or cultivated, the uprooting of plants of any kind, the defacing of trees and the carrying of flowers, fruits or plants into or from the grounds of the garden, are prohibited, except by written permission of the director in chief of the garden.

2. Leaving or depositing paper, boxes, glass or rubbish of any kind within the grounds of the garden is forbidden.

3. Dogs are not allowed within the limits of the garden except in leash.

4. It is forbidden to take fish from within the garden, or to molest in any way squirrels, birds, snakes, frogs, toads, turtles or any other wild animals.

5. Throwing stones or other missiles, playing ball, football, tennis or other games are prohibited.

6. It is forbidden to offer for sale food, candy, newspapers, books, tobacco, beverages, flowers or any other objects, without written permission from the director in chief and the commissioner of parks for the Borough of the Bronx.

7. Boating or rafting on the ponds, lakes and streams is forbidden.

8. Trucking or the driving of business wagons of any kind is forbidden on the roads of the garden, except on those designated for such purposes.

9. It is forbidden to accept or solicit passengers for any cab, carriage or other conveyance, at any point within the grounds of the garden without written permission from the director in chief of the garden and the commissioner of parks of the Borough of the Bronx.

10. Visitors are not allowed within the garden after eleven o'clock at

night nor before six o'clock in the morning except upon driveways and paths designated for their use between those hours. The garden is also protected by all the city ordinances referring to the park system. (*Descriptive Guide to the Grounds, Buildings and Collections of the New York Botanical Garden*, June 1920, pages 211–212.)

In most cities possessing botanical gardens the regular uniformed police and plain-clothes men aid in enforcing the rules and regulations. But this service is likely to be inadequate, necessitating the employment of special guards and at stated times the use of regular employees for guard purposes. Doubtless the best results can be obtained by each garden having its own guard force, supplemented by swearing in the more intelligent and reliable gardeners and laborers as peace officers.

Every botanic garden should be surrounded by a strong, high, woven wire or iron picket fence, and all roadways and walks should be brightly lighted. These two features are of the highest importance from the standpoint of policing.

Notes on Financing Botanical Gardens

1. *Botanical Garden of Harvard University.* Harvard University Botanical Garden is not supported directly by the university funds but through gifts made especially for the purpose. There is an endowment of about $5,000 a year. Beyond this, the income depends on annual gifts with slight special gifts for special purposes. For the period 1923–1926 annual expenditures have averaged about $12,000.

2. *Arnold Arboretum of Harvard University.* The financing of this great arboretum began when the trustees of the estate of James Arnold turned over a bequest of $100,000 to the president and fellows of Harvard University on condition that they would establish an arboretum and devote to that purpose a part of a farm that had previously been donated to the university by Mr. Benjamin Bussey. The university subsequently added other parts of the Bussey farm to the area of the arboretum, and the City of Boston made additions to the area. The City of Boston, through the park department, constructed and maintains the system of driveways and walks throughout the arboretum and bears the expense of policing the area.

3. *The Missouri Botanical Garden.* This garden, established by Mr. Henry Shaw and maintained by him until his death in 1889, has since that date been financed from the income of the endowment established by him for that purpose. The appraised value of the endowment property at the time of Mr. Shaw's death was not far from $1,333,000. In 1903 it was carried on the books at a value of $1,588,274.60.

4. *Buffalo Botanical Garden.* This garden was established through the

use of municipal (park department) funds and has been maintained to the present date by municipal appropriations. It is the only botanical garden in the United States that is financed entirely by municipal appropriations.

5. *New York Botanical Garden.* The act of incorporation of the New York Botanical Garden (1891) provided that when the corporation has succeeded in raising privately a sum of money sufficient, in the judgment of the Board of Commissioners of the Department of Public Parks in the City of New York, successfully to establish and carry on the work for which the corporation had been formed, said sum not to be less than $250,000, the city might set aside as a site for the garden a part of Bronx Park or a part of any other park north of the Harlem River; construct and equip a suitable fireproof botanical museum and herbarium and other suitable buildings; and, for the purpose of such construction and equipment, to issue bonds not to exceed in the aggregate $500,000. The city was also empowered to provide additional land whenever necessary.

With respect to maintenance the charter of the City of New York provides (Paragraph 1613) that it shall be the duty of the (park) commissioner for the Borough of the Bronx to maintain the New York Botanical Garden and the buildings appurtenant thereto, and to provide the necessary instruments, furniture and equipments for the several buildings; and, with the authority of the board of aldermen, to develop and improve, and to erect additional buildings. Out of the moneys annually appropriated for the maintenance of the parks the commissioner may apply such sum as shall be fixed by the board of estimate and apportionment for the keeping, preservation and exhibition of the collections in the buildings or on the grounds of the garden. The capital outlays, and especially the annual maintenance appropriations by the city, are supplemented by funds secured privately by the corporation. These funds are secured chiefly from permanent endowments, funds donated for special purposes and from membership fees.

The income of the corporation for the fiscal year ending December 31, 1925, was $308,663.81. This was composed of city maintenance appropriation, $207,871.49; and $100,792.32 from private sources. The expenditures for operation and maintenance during the same fiscal period were $306,407.15, of which $207,871.49 were from city funds and $98,535.66 from private sources. A statement of the permanent funds of the corporation at the close of the fiscal year December 31, 1925, showed a balance of $1,585,175.42. During the past two years an effort has been made to raise an additional endowment of $4,000,000. Ultimately it is desired to secure $7,000,000.

At the close of the year 1925 the number of annual members was 1,502; life members, 125; and sustaining members, 19, or a grand total of 1,646. Dues collected during this year amounted to $14,535. The various classes of membership follow:

1. *Benefactors.* Those who contribute $25,000 or more to the funds of the garden by gift or bequest.

2. *Patrons.* A contributor of $5,000 or more by gift or bequest.

3. *Fellows for life.* A contributor of $1,000 or more at any one time.

4. *Fellowship member.* A contributor of $100 annually until the total of the annual contributions aggregate $1,000.

5. *Sustaining member.* Anyone paying from $25 to $100 annually. A sustaining member becomes a fellow for life member when the payments aggregate $1,000.

6. *Annual member.* Anyone paying an annual fee of $10.

7. *Life member.* Any annual member who pays a fee of $250.

All classes of members are entitled to the following privileges:

1. Tickets to all lectures given under the auspices of the board of managers.

2. Invitations to all exhibitions given under the auspices of the board of managers.

3. A copy of all handbooks published by the garden.

4. A copy of all annual reports and bulletins.

5. A copy of the monthly *Journal.*

6. *The Brooklyn Botanical Garden.* Practically the same plan of financing the Brooklyn Botanical Garden is followed as that described for financing the New York Botanical Garden. The provisions of the New York City Charter noted under the section on the New York Botanical Garden apply to the Brooklyn Institute of Arts and Sciences, and through it, to the Botanic Garden, except that the public funds are allocated through the Department of Parks of the Borough of Brooklyn. The city owns the lands devoted to garden purposes, builds, lights and heats the buildings and keeps them in repair, and includes in its annual tax budget an appropriation for other items of maintenance. The city has met approximately two-thirds of the cost of the present buildings ($600,000). The private income of the garden comes chiefly from endowments, donations for special purposes, and membership fees.

The total public and private fund budgets for the Brooklyn Botanical Garden for the years 1925 and 1926 were as follows:

Year	*Public Appropriations*	*Private Budget*	*Total*
1925	$85,245.00	$63,029.48	$148,274.48
1926	87,489.00	66,178.60	153,667.60

Thus in 1926 it may be seen that the tax appropriation budget was 57 per cent and the private fund budget was 43 per cent of the total budget.

"All plants have been purchased with private funds since the garden

was established. In addition to this, it has been the practice of the garden to purchase all books for the library, all specimens for the herbarium, all lantern slides and numerous other items, and to pay certain salaries with private funds." (Sixteenth Annual Report of the Brooklyn Botanical Garden, 1926, page vi.)

Memberships

The Brooklyn Institute of Arts and Sciences is organized in three main departments: 1. The department of education. 2. The museums. 3. The botanic garden. Any of the following seven classes of membership may be taken out through the botanic garden: 1. Annual member, $10. 2. Sustaining member, $25. 3. Life member, $500. 4. Permanent member, $2 500. 5. Donor, $10,000. 6. Patron, $25,000. 7. Benefactor, $100,000. Sustaining members are annual members with full privileges in departments one to three of the institute. Membership in classes two to seven carries full privileges in departments one to three.

Privileges of Membership.

1. Free admission to the buildings and grounds at all times.
2. Cards of admission for self and friends to all exhibitions and openings preceding the admission of the general public, and to receptions.
3. Services of docent (by appointment), for self and party, when visiting the garden.
4. Admission of member and his or her immediate family to all lectures, classes, field trips and other scientific meetings under garden auspices, at the garden or elsewhere.
5. Special lectures and classes for the children of members.
6. Copies of garden publications, as follows: (*a*) Record; (*b*) guides; (*c*) leaflets; (*d*) contributions.
7. Privileges of the library and herbarium.
8. Expert advice on the choice and care of plants, indoors and out, on planting the home grounds, the care of lawns and the treatment of plants affected by insect and fungous pests.
9. Identification of botanical specimens.
10. Participation in the periodical distribution of duplicate plant material and seeds, in accordance with special announcements sent to members from time to time.

The total number of members of all classes (as of April 1927) is 1,220.

SECTION I

THE STATE STATUTE CREATING THE NEW YORK BOTANICAL CORPORATION

The constitution and the by-laws of the corporation are so valuable as suggestions to other communities considering the establishment of botanical gardens that they are herewith present in full.

Act of Incorporation of the New York Botanical Garden, as amended by Chapter 103 of the Laws of 1894, Chapter 717 of the Laws of 1896 and Chapter 473 of the Laws of 1914.

Chapter 285. An act to provide for the establishment of a botanic garden and museum and arboretum, in Bronx Park, in the City of New York, and to incorporate the New York Botanical Garden for carrying on the same. Approved by the Governor, April 28, 1891. Passed, three-fifths being present.

The people of the State of New York, represented in Senate and Assembly, do enact as follows:

Section 1. Seth Low, Charles P. Daly, John S. Newberry, Charles A. Dana, Addison Brown, Parke Godwin, Henry C. Potter, Charles Butler, Hugh J. Grant, Edward Cooper, Cornelius Vanderbilt, Nathaniel L. Britton, Morris K. Jesup, J. Pierpont Morgan, Andrew Carnegie, Thomas F. Gilroy, Eugene Kelly, Jr., Richard T. Auchmuty, D. O. Mills, Charles F. Chandler, Louis Fitzgerald, Theodore W. Myers, William C. Schermerhorn, Oswald Ottendorfer, Albert Gallup, Timothy F. Allen, Henry R. Hoyt, William G. Choate, William H. Draper, John S. Kennedy, Jesse Seligman, William L. Brown, David Lydig, William E. Dodge, James A. Scrymser, Samuel Sloan, William H. Robertson, Stephen P. Nash, Richard W. Gilder, Thomas Hogg, Nelson Smith, Samuel W. Fairchild, Robert Maclay, William H. S. Wood, George M. Olcott, Charles F. Cox, James R. Pitcher, Percy R. Pyne and such persons as are now, or may hereafter be associated with them, and their successors, are hereby constituted and created a body corporate by the name of the New York Botanical Garden, to be located in the City of New York, for the purpose of establishing and maintaining a botanical garden and museum and arboretum therein, for the collection and culture of plants, flowers, shrubs and trees, the advancement of botanical science and knowledge, and the prosecution of original researches therein and in kindred subjects, for affording instruction in the same, for the prosecution of original researches therein and in kindred subjects, for affording instruction in the same, for the prosecution and exhibition of ornamental and decorative horticulture and gardening, and for the entertainment, recreation and instruction of the people.

Section 2. Said corporation shall have all such corporate powers, and may take and hold by gift, grant or devise all such real and personal property as may be necessary and proper for carrying out the purposes aforesaid, and for the endowment of the same, or any branch thereof, by adequate funds therefor.

Section 3. Said corporation may adopt a constitution and by-laws; make rules and regulations for the transaction of its business, the admission, suspension and expulsion of the associate members of said corporation, and for the number, election, terms, and duties of its officers, subject to the provision of this act; and may from time to time, alter or modify its constitution, by-laws, rules, and regulations, and shall be subject to the provisions of Title 3, of Chapter 18, of the first part of the Revised Statutes.

Section 4. The affairs of the said corporation shall be managed and controlled by a board of managers as follows: the president of Columbia College, the professors of botany, of geology and of chemistry therein, the president of the Torrey Botanical Club, and the president of the board of education of the City of New York, and their successors in office, shall be *ex officio* members of said corporation and of the board of managers, and be known as the scientific directors; they shall have the management and control of the scientific and educational departments of said corporation and the appointment of the director in chief of said institution, who shall appoint his first assistant and the chief gardener, and be responsible for the general scientific conduct of the institution. All other business and affairs of the corporation, including its financial management, shall be under the control of the whole board of managers, which shall consist of the scientific directors, as herein provided, and of the mayor of the City of New York, the president of the board of commissioners of the department of public parks, and at least nine other managers to be elected by the members of the corporation. The first election shall be by ballot, and held on a written notice of ten days, addressed by mail to each of the above-named incorporators, stating the time and place of election, and signed by at least five incorporators. Three of the managers so elected shall hold office for one year, three for two years, and three for three years. The term of office of the managers elected after the first election, save those elected to fill vacancies in unexpired terms, shall be three years; and three managers and such others as may be needed to fill vacancies in unexpired terms shall be elected annually, pursuant to the by-laws of the corporation. The number of elective managers may be increased by vote of the corporation, whose terms

and election shall be as above provided; and members may from time to time be added to the scientific directors by a majority vote of the scientific directors, approved by a majority vote of the whole board of managers. The board of managers shall elect from their number a president, secretary and treasurer, none of whom or of the board of managers, save the secretary and treasurer, shall receive any compensation for his services. Nine corporators shall constitute a quorum at any meeting of the incorporators, but a less number may adjourn.

Section 5. Whenever the said corporation shall have raised, or secured by subscription, a sum sufficient in the judgment of the board of commissioners of the department of public parks in the City of New York, for successfully establishing and prosecuting the objects aforesaid, not less, however, than two hundred and fifty thousand dollars within seven years from the passage of this act, the said board of commissioners is hereby authorized and directed to set apart and appropriate upon such conditions as to the said board may seem expedient, a portion of the Bronx Park, or of such other of the public parks in the City of New York north of the Harlem River in charge of the said department of parks as may be mutually agreed upon between the said board of commissioners and the board of managers of said corporation in lieu of Bronx Park, not exceeding two hundred and fifty acres, for establishing and maintaining therein by the said corporation a botanical garden and museum, including an herbarium and arboretum, and for the general purposes stated in the first section of this act. And the said board of commissioners is thereupon hereby authorized and directed to construct and equip within the said grounds so allotted, according to plans approved by them, and by said board of managers, a suitable fireproof building for such botanical museum and herbarium, with lecture rooms and laboratories for instruction, together with other suitable buildings for the care and culture of tender or other plants, indigenous or exotic, at an aggregate cost not exceeding the bonds hereinafter authorized to be issued by the City of New York; the use of said buildings upon completion to be transferred to said corporation for the purposes stated in this act. And for the purpose of providing means therefor, it shall be the duty of the comptroller of the City of New York, upon being thereto requested by said commissioners, and upon being authorized thereto by the board of estimate and apportionment, to issue and sell at not less than their par value bonds or stock of the mayor, aldermen and commonalty of the City of New York, in the manner now provided by law, payable from taxation, aggregating the sum of five hundred thousand dollars, bearing interest at a rate not exceeding three and one-half per centum per annum, and to be redeemed within a period of time not longer than thirty years from the date of their issue.

Section 5-a. The board of estimate and apportionment of the City of New York may, in its discretion, set apart and appropriate, upon such conditions as it may deem expedient, for the extension and development of the work and objects of the said New York Botanical Garden, the whole or any part of that portion of Bronx Park in the City of New York situated between the southern boundary of the land in Bronx Park heretofore appropriated for the use of the said New York Botanical Garden by the board of commissioners of the department of public parks, and the northern side of Pelham Avenue; the land so to be appropriated to be described more particularly in the board of estimate and apportionment hereby authorized. — Chapter 473, Laws of 1914.

Section 6. The grounds set apart, as above provided, shall be used for no other purposes than authorized by this act, and no intoxicating liquors shall be sold or allowed thereon. For police purposes and for the maintenance of proper roads and walks, the said ground shall remain subject at all times to the control of the said board of commissioners of the department of parks; but otherwise, after the suitable laying out of the same and the construction of proper roads and walks therein by the department of parks, the said grounds and buildings shall be under the management and control of the said corporation. The said grounds shall be open and free to the public daily, including Sundays, subject to such restrictions only as to hours as the proper care, culture and preservation of the said garden may require; and its educational and scientific privileges shall be open to all alike, male and female, upon such necessary regulations, terms and conditions as shall be prescribed by the managers of those departments.

PROVISIONS OF THE CHARTER OF THE CITY OF NEW YORK FOR MAINTENANCE

Section 1613. It shall be the duty of the commissioner for the Boroughs of Manhattan and Richmond to maintain the meteorological and astronomical observatory, the Museum of Natural History, the Metropolitan Museum of Art in Central Park, the aquarium in Battery Place, and such other buildings as now are or may thereafter be erected in such parks or in any other park, square or public place under his jurisdiction by authority of the board of aldermen. It shall be the duty of the commissioner for the Boroughs of Brooklyn and Queens to maintain the Brooklyn Institute of Arts and Sciences, and such other buildings as now are or may hereafter be erected in any park, square or public place under his jurisdiction by authority of the board of aldermen. It shall be the duty of the commissioner for the Borough of the Bronx to maintain the New York Botanical Garden and the buildings appurtenant thereto, and such other institutions or buildings as may

be established or erected in any park, square or public place in his jurisdiction by authority of the board of aldermen. It shall be the duty of the several commissioners to provide the necessary instruments, furniture and equipments for the several buildings and institutions within their respective jurisdictions, and, with the authority of the board of aldermen, to develop and improve the same, and to erect additional buildings; but the maintenance of all such buildings and institutions shall be subject to the provisions of the acts incorporating said institutions, or either of them, and the acts amendatory thereof, and to the powers of said corporations thereunder, and of the boards by such acts created or provided for; and shall also be subject to and in conformity with such contracts and agreements as have heretofore been made with such institutions respectively, and are in force and effect when this act takes effect, or as may be hereafter made by the authority of the board of aldermen, and no moneys shall be expended for such purposes unless an appropriation therefor has been made by the board of estimate and apportionment and the board of aldermen. Out of the moneys annually appropriated for the maintenance of parks each commissioner may apply such sum as shall be fixed by the board of estimate and apportionment for the keeping, preservation and exhibition of the collections placed or contained in buildings or institutions now situated or hereafter erected in the parks, squares or public places under the jurisdiction of such commissioner.

Section 625. The commissioner for the Borough of the Bronx is hereby authorized and directed to carry out the existing contract made by and between the department of parks of the corporation heretofore known as the mayor, aldermen and commonalty of the City of New York and the board of managers of the corporation known as the New York Botanical Garden pursuant to the provisions of Chapter 285 of the laws of 1891, entitled "An act to provide for the establishment of a botanic garden and museum and arboretum in Bronx Park in the City of New York and to incorporate the New York Botanical Garden for carrying on the same," as amended by Chapter 103 of the laws of 1894, which contract provides for the allotting and setting apart for the uses of said garden of two hundred and fifty acres of land or less in the northern part of Bronx Park as shown upon a certain map thereof numbered 568, and signed by Messrs. Vaux and Parsons, and filed with the former department of public parks of the corporation known as the mayor, aldermen and commonalty of the City of New York.

CHAPTER XIX

EDUCATIONAL PUBLICITY

The American people have invested in municipal and county park and recreation systems several billions of dollars. Every year notable increases are made to this already stupendous investment. In operation and maintenance several tens of millions of dollars are expended yearly. This capital outlay and this yearly allocation of public funds for operation and maintenance has been and is being made by the people in the hope of preserving certain fundamentals of life, and especially in the hope of securing life more abundant for themselves, their children and their children's children. It is, therefore, a weighty and grave responsibility that is laid upon park governing authorities and chief executives not only in acquiring, planning, developing and maintaining these properties which represent so large an investment of the people's money but especially in operation, to the end that the maximum number of people secure the life-giving values for which the investments were made.

It is a curious fact in the history of parks in this country that park governing authorities and executives, except when conducting campaigns for money with which to acquire properties or to develop them, have made little use of carefully organized educational publicity in the operation of the properties and facilities entrusted to their care. The prevailing attitude has seemed to be after the properties have been acquired and developed, "Well, here are the properties and the facilities, the people may come and use them if they wish." As a matter of fact their real work has just begun. Their supreme function is not to acquire property or to develop it, but to see that the people use the property and facilities. Acquisition and development of property are merely preliminary and necessary steps in the process of service. Their fundamental service begins when the properties are ready to use. In the discharge of this most important of all functions it is the duty of park and recreation governing authorities and chief executives to make the most efficient use possible of the art and science of educational publicity just as any business enterprise would do if administering so great an investment.

One of the reasons, no doubt, why more park and recreation departments have not a thoroughly organized division of publicity is in the difficulty in showing the results of publicity, except in terms, perhaps, of increased attendance. In business enterprises the value of any given line of publicity can be measured more or less definitely not only by the volume

of sales but also by the increased profits which are the primary object of conducting the business. Those results which represent profits in the operation of park and recreation departments, such as raising the standard of individual and community health, prevention of juvenile and adult delinquency, elevating standards of moral conduct, the development of physical, mental and cultural qualities, increasing happiness, etc., cannot be measured definitely. In time, perhaps, by the use of scientific methods of study and evaluation of the operative processes of park and recreation systems, it may be possible to state in more or less definite terms the actual results of the services on human life, but at best the results will always remain more or less intangible and unmeasurable.

However, these considerations should not deter park and recreation authorities from taking a leaf from the primer of the business world. In park and recreation administration, educational publicity is of great importance from four different viewpoints:

1. In establishing a system and in securing funds for acquisition and development of properties.

2. In educating the people as to where the properties are and what facilities and general opportunities they will find there for their recreation, instruction and entertainment.

3. In educating the people in the use of the properties and facilities so that they individually will receive the greatest benefit from them and will still leave the properties and facilities in good condition for the use of others.

4. In acquainting the people of other recreational resources of the community and in the vicinity of the community other than those directly under the control of the department itself.

Each of these viewpoints will be discussed in more or less detail.

1. Publicity for Establishment of System.

The organization and the use of publicity in the establishment of a park system, and for funds for the acquisition and development of properties has been presented in considerable detail in the Chapter on "General Planning of a Park System" so that it will be unnecessary to discuss this phase of publicity further here.

2. Publicity regarding Facilities and Their Location.

The ignorance of the average citizen of his own home community is one of the interesting phenomena of community life in America. No park governing authority or chief executive should ever assume that all the people are acquainted with even the location of all the properties under his jurisdiction, to say nothing of the details of the development of these

properties and the opportunities offered there for the people's use. Year after year these facts should be brought to the attention of the people through as many avenues of publicity as possible. Some of the means of acquainting the people with these facts may be enumerated as follows:

(*a*) *Compilation and publication of a leaflet or pamphlet, yearly, for free distribution, giving the name, location and the facilities of each property in the system, together with instructions as to how to reach the property, if of general community use.* Facts concerning distinguishing characteristics as to plant life, geological formations and fine views might be included, as well as information regarding any organized recreations which may be conducted, and at what seasons and hours. Following the general list of properties and facilities a part of the leaflet or pamphlet might well be given to a compilation of similar features or facilities. Thus all baseball diamonds and their locations might be in one table, all tennis courts in another, bathing places in another, picnic places in another, and distinguishing groups or displays of plant life and good places for the observation and study of bird life in other tables. Such information would facilitate the location by those interested in particular features. A small map of the park and recreation sites should be included in the pamphlet.

An attempt should be made to get these pamphlets into as many homes as possible. This could be fairly effectively accomplished by systematic distribution through the schools; by sending them out, if not too large, in the monthly bill envelopes of the water department; by distributing them through the playgrounds and other places where people congregate throughout the park and recreation system; by play leaders when visiting the homes of the people in the vicinity of their playgrounds. No doubt the local press would print large sections of such a publication, thus giving the information wide circulation. Such information, or parts of it, might be published through chamber of commerce bulletins and general city guides such as are found in the larger cities and often in the smaller ones. Municipal directories might include much of the information. Some municipalities publish a municipal paper through the columns of which all of the information might be issued. Only a very few park systems issue such condensed leaflets or pamphlets of information.

(*b*) *Talks and lectures.* In nearly every community there are organized clubs and groups, most of which have some kind of an instructional program during the year. The chief executive and subordinate officials will in all probability be called upon to give talks from time to time concerning the park and recreation system before many of these organizations, or places on the programs can usually be easily arranged by the office of the department or by the publicity director if there is such an employee. As a form

of publicity this is not especially effective from the viewpoint of the numbers of people reached, although a much wider audience may be reached through the press reports of the meetings. This form of publicity can be made, however, rather widespread and effective if definitely organized and promoted. It does reach a considerable number of people who are thinking of community problems and trying to do things in the community. In order to lessen the burden of too much speaking by executives and subordinates capable of doing this sort of thing, it might be possible to organize a corps of speakers from among leading citizens of the community, training them in the facts and methods of presentation and sending them out on such occasions.

The department should be supplied with stereopticon machines and sets of slides for use in making popular instructional talks. A portable moving picture outfit would be found invaluable.

(*c*) *Personal visits.* In connection with the opening of a playground or a neighborhood playfield-park or a community center, one of the most effective means of publicity is to send out, a few days before the opening, the workers who are to be in charge of the particular playground, park or center, to visit among the people residing in the vicinity. The workers would give the families first-hand information of what is going to take place, the hours each day the playground, park or center will be open, the facilities to be found there and the activities to be conducted. This is not only effective publicity but also the best possible preliminary work in the management of the property and in the organization and conduct of the activities there. It gives the workers a knowledge of neighborhood conditions that will be invaluable in the organization and conduct of the program, and if they make a good impression on the parents they will the more readily send their children and attend themselves.

(*d*) *Special announcements, placards, posters.* These or similar forms of publicity are used quite extensively in many park and recreation systems in connection with organized activities. A few examples are:

Band Concerts. Preliminary to the opening of a series of band concerts a special announcement containing the schedule of concerts for the season, giving name of band, the date, place and hour of each concert, may be printed and widely distributed through means as those mentioned under (*a*). The press would in all probability print the entire schedule. For each concert a special program announcement may be published and distributed among the audience. This might have on the reverse side a list of all the concerts for the season.

Opening of a New Playground. Preliminary to the opening of a new playground a poster or placard might be issued announcing the date of the

opening, hours to be open, list of facilities there and a statement of the activities to be conducted. These, posted at conspicuous places about the neighborhood, are effective means of publicity for this kind of an event. A similar form of publicity may be used in connection with the opening of a swimming center, a gymnasium, or a new community building, boating center, golf course, etc. The poster or placard is the standard form of advertising tournaments, play festivals, athletic meets, swimming meets, field days, dramatic performances and municipal camps. Where a set of facilities are operated seasonally, a common form of publicity is the issuance of a poster giving a list of the facilities, the location of each, the date of opening of each and the hours they will be operated together with the schedule of charges if charges are made. A special announcement in the form of a leaflet giving the same sort of information is sometimes used in this connection.

(*e*) *Parades, demonstrations.* In cities where a great deal of interest has been aroused in some particular sport or several different sports, a downtown parade of all the players that have entered the contest or contests for the season creates not only a great deal of enthusiasm among the players but also arouses a great deal of public interest. In some instances the mayor has issued a special proclamation concerning the opening of the season and declared a half holiday. A parade of several hundred to a thousand or more baseball players, of several hundreds of tennis players and golf players, each with the appropriate emblem of his sport, is a sight long to be remembered and does without doubt inspire large numbers of other

PLATE NO. 374. BOARD OF PARK COMMISSIONERS EXHIBIT AT HEALTH SHOW, MILWAUKEE, WISCONSIN, APRIL 1923

Illustrating one method of educational publicity

eligibles to enter the activities. Each great festival day or holiday is an opportunity for a public demonstration of great publicity value, as are the various play days, meets, tournaments.

(*f*) *Pictorial, handcraft and other types of exhibits.* It is usually very easy to secure the coöperation of the proprietor or manager of large business establishments downtown in setting up in a large show window a floral display, pictorial display or an exhibit of handcraft work or a display of trophies, etc. Some of the firms are also very pleased to use publicity material concerning the park and recreation system in their newspaper advertising. Exhibits of this character at local fairs, health shows and other public places and affairs are also effective means of publicity.

(*g*) *The press.* Of all the forms of publicity, direct or indirect, the most far-reaching and perhaps the most effective is to be had through the daily and weekly press of the community. Few public service departments have more material for news items, human interest stories, and special feature stories or a possible wider range of pictures desired by newspapers than does a park and recreation department. It is through the medium of the press that most of the publicity is secured by park and recreation departments in America today. Nearly all other avenues of publicity feed directly into this and multiply their effectiveness a hundredfold.

Suggestions for Newspaper Publicity

Study each paper carefully to determine its policy and style.

Play no favorites. If a story breaks in the morning, give it to the afternoon paper. If it breaks late in the afternoon, give it to the morning paper. Learn when your editor wants his news and get it to him before that hour.

Newspapers have collected an audience for their own purpose and contributed material must meet the test of serving that purpose.

In your first paragraph, give an answer to the following questions: What? Why? When? How? Where? Who?

Avoid technical terms or the special phrases of your own organization.

Be concrete and simple.

Prepare your copy in accordance with newspaper practice. Typewrite it or write it legibly; leave plenty of space at top of sheet for head; write on one side of sheet only; double or triple space all typed copy; fold copy twice, do not roll it; spell correctly; get names correctly with all initials.

Study the way newspapers rewrite your own material.

Newspapers prefer to write their own headlines.

True human interest stories are glittering gems in the drab setting of routine news that floods newspaper offices.

Many departments of the newspaper can give you publicity — news columns, cartoons, editorials, advertising columns, woman's page, sports page, letter columns.

Photographs for newspaper publication must have animation, simplicity of composition, and the appearance of truth — that is, the picture must actually portray what the caption describes.

Newspapers appreciate any courtesy shown to them or their reporters.

The newspaper is a business enterprise.

General Principles in Publicity

Accuracy is of fundamental importance. Do not exaggerate.

Publicity should be educational. Just to be known, even widely, is not enough.

Reiterated impact is an important principle.

Good publicity is measured by the amount that sticks in the mind.

Attempt only those things which can be done effectively.

Express appreciation of individuals and organizations who help.

Keep yourself, as director, in the background.

Appeal to civic pride. Hammer hard at home-town stuff.

Do not promise the public too much.

Appeal to curiosity.

Get personally acquainted with the editor. Make a point of thanking him for any publicity given by his paper.

It is not commonly recognized, but the owners, managers or editors of a very large number of newspapers throughout the country not only print news, and feature stories, concerning public park and recreation activities, but they also play an important role in actively promoting desirable recreational activities, while at the same time giving an enormous amount of space to publicity concerning the particular activity or activities. Examples in point are zoölogical and botanical identification contests such as those conducted by the Park and Recreation Department of Dallas, Texas, which is actively aided by the local press; the promotion of marble tournaments in several cities; of handcraft activities through bird box construction and pushmobile contests, and of athletic leagues and tournaments.

(*h*) *Publication of bulletin-newspaper, whether in mimeographed or printed form.* In the larger systems, and especially in those systems where an extensive program of recreation is carried on, a weekly or monthly bulletin is very effective, not only in keeping a selected list of citizens informed as to what is going on, but in serving as the medium for acquainting each division of the department of the activities of the others, thereby keeping alive *esprit de corps* by personal mention of the achievements of different

staff members in the several divisions. Such a publication might carry news items regarding the programs of park systems in other cities.

The commissioner of parks of the Borough of the Bronx, New York City, issues such a publication usually in magazine form and believes that the slight cost involved for such a publicity medium is money well invested.

A similar type of publication edited from the point of view of the users of the facilities in the parks is valuable both as publicity and as a means of stimulating interest among the patrons. The preparation of material and the editing and distributing of the paper has high recreational-educational value as a form of activity. The newspaper prepared by the boys and girls who use the facilities of the Evanston, Illinois, recreation system has aroused nation-wide interest among park and recreation officials.

(*i*) *Publication of annual report.* It is greatly to be regretted that every park department in the United States does not issue a printed annual report, not so much because of its value as local publicity, although important as such if judiciously distributed, but because it makes readily available a current history by years of the department and facilitates exchange of information among park departments in various cities. Due to the wave of economy during the war, and continued since that time to a greater or less degree, many park departments which formerly issued excellent reports no longer do so. It is strongly recommended that every park department which can possibly squeeze money enough from its budget to print an annual report, issue one.

(*j*) *Signs.* The securing of publicity through signs is universally practiced to a more or less extensive degree by park departments. The type of signs thought of in this connection include direction signs showing the way to leading areas or the facilities of the system, name signs at main entrances to areas, direction signs within areas, along driveways and walks, signs which give positive instructional information, such as labels on trees or on boards at flower beds or groups of shrubbery, and names of specimens in the zoo. There is a type of sign, however, which has a directing-restraining intent and is closely related to the policing of the area.

(*k*) *Bulletin board.* The bulletin board is a fundamental necessity in connection with all types of active recreation areas. It is in a certain sense an immobile news sheet and will be in constant use during the active season for announcements, posting of rules and regulations and for standings of organized teams and of players in tournaments and for many other purposes.

(*l*) *Publicity by word of mouth as a result of the merit of services rendered.* While all the forms of publicity mentioned are important, in the last analysis the best publicity is the worth of the services rendered by the department and the resultant personal commendations that people make to one another

about the services. When a parent is moved to say, "My children attended such and such a playground and it has been a real education for them"; or when one young person says to another, "I had a glorious time at such and such a bathing center"; or "I spent two weeks at the municipal camp. It is a wonderful place"; or one citizen remarks, "The flower show of the park department was an inspiration"; or "The municipal golf course is in fine condition and the management excellent" — the department is not only securing the most worthwhile publicity but it is at the same time receiving the highest praise that can be bestowed upon its efforts.

3. Education in the Use of Parks.

Most forms of publicity directed at the education of the people in the use of park and recreation facilities, to the end that the plants and structural features will not be injured beyond what is to be reasonably expected from usage, are in reality a constructive form of police organization and management and might well be included in the Chapter on "Park Policing." Such publicity, however, is so intimately connected with those forms designed to encourage the use of recreation areas that they belong better in this chapter. The objectives of the two classes of publicity are in some respects diametrically opposed, the former being intended to acquaint the people with what they have and encourage them to make use of their properties, while the latter is intended to teach them restraint in this use.

(*a*) *Signs.* The simplest form of publicity teaching restraint is by signs — a type of publicity which was banned about fifteen or twenty years ago largely because it was conducted in purely commandatory and prohibitory terms and because it stood for an actual prohibition of the use of park areas by the people. In this day of positive encouragement of people to use all the different types of park and recreation areas, a judicious use of attractive signs, more from the viewpoint of instruction rather than that of prohibition, may very well be practiced, although such signs are a very difficult problem if they are at all conspicuous, and they must necessarily be thoroughly conspicuous if they are to be seen. Such signs may use only the single word "Please" attractively painted on a small board mounted on a low stake in a lawn or flower bed or shrubbery. It is a hardened offender indeed who can resist obedience to this implicitly courteous appeal. Or the sign may carry a simple appeal such as: "Please do not pick the flowers; others may like to see them, too." Or, "This park is for your use and enjoyment. Help us to keep it attractive so that others may find happiness in its use, too." It is good psychology to word all such signs in courteous language, even though the mailed hand is behind them.

Signs may consist of copies of rules and regulations adopted by the

governing authorities for the guidance of the people in the use of facilities. These may be excerpts from general rules and regulations or they may be specific directions regarding the use of play equipment, tennis courts, swimming places, golf courses and other facilities. Such rules and regulations may be printed on cloth or heavy cardboard and tacked onto boards made expressly for the purpose, or printed on a board or sheet metal. The latter is the more desirable and satisfactory, for the former may become faded and easily torn. In some instances a bulletin board or sign case may be expressly constructed with a glass door, the better to protect the sign from weather and possible destruction.

(*b*) *Rules and regulations.* Educational publicity by signs is an indirect method of educating people. It is not likely to prove very effective unless it is supplemented by more direct word-of-mouth educational publicity.

One of the most difficult problems that any chief executive faces is to inculcate in the people a sense of proprietorship in public recreation areas which will lead to their use without abuse. Most people have a very keen sense of proprietorship in public recreation areas, and a very large number seem to feel that they must show this proprietorship by destroying something or by leaving places they have used in as disorderly a condition as possible.

Police or guards have been the main reliance in parks for the restraint of the people in their destructive or disorderly tendencies, and if properly trained they will in all probability always be increasingly important agents, not only in the restraint of the people, but particularly in their instruction. Instruction of the people, however, should be conceived and handled upon a much broader basis. It should begin in the schools with children and from that point be carried before every organized group that can possibly be reached in a community. A plan of this kind will require in the first place the coöperative help of the superintendent of the schools and the teachers. The school superintendent and the chief park executive might formulate a simple lesson in conduct for the children in relation to the care which they should exercise toward plants and all other natural living things in parks and toward the care of the properties therein. For the upper grades and the high schools this could be used as a part of the instruction in community civics. From time to time the park department might provide some one accustomed to talking before children to speak briefly at general assemblies or before classes. In the courses in nature study as followed in classrooms and in excursions to the park, the teachers can even more directly and pointedly inculcate the desired principles of conduct. If some such instruction as this were followed year after year, there would without doubt come

about a very marked change for the better with respect to the attitude of the people toward the care of their recreation areas.

The campaign, however, should be carried further than the schools. The preservation of the beauties and works of nature and the proper use and preservation of man-made facilities designed for the upbuilding of health, strength and character through joy in life, should appeal to every religious and ethical leader in the community. Churches use parks for picnics and active recreation areas for athletic activities. It is fitting, therefore, for the ministers to give some definite, pointed instruction to the children and young people of a Sunday school, to the members of the young people's society and to his congregation regarding their conduct in relation to the care of properties in parks provided for their use.

Organization for Educational Publicity.

In the great majority of park systems the duty of organizing and conducting educational publicity is likely to fall upon the chief executive himself for the reason that the larger number of such systems are in communities of relatively small population where the general organization of the department is not highly departmentalized. At the present time, even in the larger communities with park departments having several functional divisions and different types of specialists, the chief executive usually assumes the role of educational publicist for such publicity as is secured. This is chiefly because this fundamental duty has not been given the position its importance warrants among the functional services of the department, and consequently no definite organization has been perfected for carrying it on.

In all such instances the chief executive must of necessity appear personally before different groups to give talks and addresses, must prepare copy for the press, take pictures, or have them taken, to illustrate human interest features, prepare bulletins, pamphlets and annual reports, take responsibility for the preparation and posting of signs and give out information. But in carrying on all these possible lines of publicity every member of the executive staff should give personal assistance. Thus the playground supervisor should keep the executive informed of interesting happenings on the playground and of special events, and may often prepare the copy for such material; the secretary will give out information upon calls from citizens; the director of the conservatory and the head gardener will keep him informed regarding the time when floral displays will be at their best and most likely to be enjoyed by the people; the director of the zoo will tell him of any unusual happening which may be of special public interest, and other department heads will inform him of events in their departments. The reporter for the local press will, no doubt, be of much assistance in the actual preparation of copy for the press if given the information.

In a number of systems some particular member of the staff, especially one who may have had newspaper experience or who has a talent for publicity, is designated to handle the publicity in connection with his other duties.

In the larger and more highly developed park system such a method of organizing and carrying on publicity is more or less a makeshift. Publicity is today a distinct profession just as forestry, landscape gardening and the conduct of organized recreation are professions. It should have a definite divisional position in the department with a director of educational publicity in charge. Where there are two departments in a community — a park department and recreation department — the employment of such a director might conceivably be a joint project. While it is desirable that such a director be skilled in newspaper technique, more than this should be required, for his real function is to educate the community in the values of recreation and the special opportunities afforded for recreation by the department and by other agencies in the community, and in the use of the facilities offered. In a sense he must combine the functions of an expert investigator and interpreter of community institutions and community recreational needs with that of the educational publicist.

Duties of the Educational Publicity Director.

1. A publicity director should keep himself intimately informed of the details of the activities of every division of the park department. Workers on the firing line engrossed in the details of organizing and conducting their divisions are not always conscious of the news value of the things they are doing nor do they often have the time to interpret what they are doing even if they are conscious of the interest of their program to the public.

2. He should be thoroughly conversant with every agency and institution in the community making a contribution to the city's recreational life, studying the work of these institutions to see how their programs may be correlated with the work of the park department. He should be familiar with certain general community conditions relative to juvenile delinquency, health and working conditions and cultural conditions so that he will know better where to put the emphasis in publicity regarding these conditions, if the services of the park department may in any way be made to affect the situation.

3. It should be his responsibility to organize and conduct any or all the various lines of publicity mentioned and others not specifically outlined.

It is hardly necessary to suggest that the publicity director should keep the chief executive intimately informed of all that he plans to do. Publicity can often do as much harm to a cause as it does good if it is ill-timed or

improperly presented. The chief executive is the ultimate authority as to the character and timelessness of publicity, for upon him rests the entire responsibility for the success of the department.

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CHAPTER XX

THE TRAINING OF PARK EXECUTIVES

In the Chapter on "General Executive Organization of a Park Department" some factors in the training of a modern park executive were briefly discussed (pages 536–538). Obviously the character of the functional services provided by modern park departments will determine to a marked degree the content of the knowledge required of park executives. The knowledge requirements will, in turn, largely determine the courses of training that an individual intending to make a profession of park executive work should pursue. Before attempting to present tentatively a course in training it is important to examine what park executives and others who have given serious thought to this subject for the past several years have suggested.

Reports of the Committee on the Training of Park Executives, American Institute of Park Executives

The first report of this committee was made to the American Institute of Park Executives on August 23, 1923. Omitting the introductory paragraph the report reads as follows: "The committee has sought and obtained the views of a considerable number of representative men of different training engaged in park work, and now begs to submit a general outline course it deems advisable should be established for the adequate training of young men who propose to make the development and care of the park systems of the North American continent their life work.

In the first place it is well to consider whence and by what routes have come the men now controlling, as executives, the park systems of this continent. The majority have entered into this work from its two major branches, horticulture and engineering, having obtained their training in such either on this continent or in Europe, or partly in each, and their individual development in the work has been concurrent with the development of the park systems of America; in other words, they have developed with the systems. Little cause for quarrel will be found with the statement that many excellent executives have been developed by this means — the park systems themselves are proof of this — but with the multifarious and varied duties undertaken by the governing bodies of present-day park systems in catering to the public demands, it is deemed desirable that a regular and recognized course of instruction should be laid

down to thoroughly prepare men for the responsible positions of park executives.

It will not be out of place to enumerate a few of the characteristics it is desirable a park executive should possess, for unless a young man shows signs of possessing a majority of these he should look elsewhere for his future career.

In the first place he should be of sterling character; secondly, he should be a good organizer and able to develop executive ability. He should be a lover of nature. He should also possess a love for humanity, as this will enable him to render cheerful service to his fellow men, and work harmoniously with those he serves and those he controls. Finally, he should be somewhat of an artist, yet of natural constructive and practical ability.

As to education, it is essential that a candidate should have graduated from a good high school, and if a technical high school, so much the better.

As to training — the committee deems it desirable to lay down two alternative courses, which may be followed, *viz.:* (*A*) A four-year course in some university situated in the vicinity of one or more large city systems, and if possible of a state or national park. (*B*) A three-year course as student-employee or apprentice on a modern park system, followed by a two-year university course, during which time he should specialize in both horticulture and engineering. Followed in either case by two years' practical work on a good park system.

To carry out either of these courses it is essential that the coöperation of one or possibly two centrally situated universities be sought with a view to the establishment of the work on a thorough and practical scale; and what is equally necessary, the coöperation of the governing bodies of park systems and their executives must be secured to enable students under scheme (*A*) to secure practical work and experience during their vacations, and opportunities of employment at the end of their college careers to complete their training; and under scheme (*B*) to receive one or two student-employees or apprentices on each large park system. The student or apprenticeship course under scheme (*B*) should embrace periods of work (*a*) in the nursery, (*b*) in the forestry branch, (*c*) on construction work, (*d*) in the drawing office, and (*e*) in the general office.

The committee is not in a position at present to recommend any definite university curriculum under either scheme — such can be considered and drawn up after the institute has passed verdict on the present report — but is of the opinion that it should embrace horticulture, civil engineering, forestry, landscape architecture, the rudiments of architectural design, floriculture, botany, agronomy, zoölogy, recreation activities, economics and business administration, together with such other general subjects as will

tend to broaden the education and outlook of the future park executive."

Report signed by Allen S. Wootton, Park Engineer, Vancouver, B. C., chairman; W. L. Skoglund, Park Superintendent, St. Joseph, Mo.; L. P. Jensen, Arboriculturist, Missouri Botanical Gardens, St. Louis, Mo.; E. A. Piester, Associate Professor, Department of Landscape Architecture, Iowa State College, Ames, Iowa.

Second Report of the Committee

"The second report of the committee of the American Institute of Park Executives on Training of Park Executives, July 15, 1924, is to be taken as supplemental to the committee's report submitted last year at the Kansas City Convention, the two forming the complete report of your standing committee on this subject. After mature consideration, your committee is of the opinion that the time is not yet ripe for the institution of a four-year university course, and that for the present the efforts of the executives of the institute should be concentrated on the initiation of the apprenticeship system in park work, and the establishment of the two-year university course.

Your committee recommends the following apprenticeship and university curricula, the latter to follow immediately after the former:

Suggested Three-Year Apprenticeship Course.

(*a*)	In nursery (all branches of work)	12 months
(*b*)	With forestry gang (planting, pruning, spraying, etc.) .	6 months
(*c*)	Practical construction (grading, seeding, planting, etc.) .	9 months
(*d*)	Drawing office and field work	6 months
(*e*)	General office	3 months

Night school subjects to be taken during apprenticeship:

(*a*) Mathematics (algebra and trigonometry).
(*b*) Drafting, map-reading and blueprint reading.
(*c*) Public speaking.
(*d*) Accounting.
Botany in lieu of (*b*) if student has attended a technical high school.

University Curriculum (two-year course).

First Semester	*Credit Hours*
English	3
Elementary botany	4
Principles and appreciation of landscape architecture (leading to its application in park design)	3
Money and finance	2
Elementary surveying	4

Second Semester
- English (reports and special articles) 3
- Elementary zoölogy 2
- Surveying (including setting out work and calculations for earth work) 4
- Theory of design of public properties 3
- Municipal government 2
- Agronomy 2

Third Semester
- Entomology 3
- Plants and planting design 4
- Parks and park details 3
- Building construction and principles of architectural design 3
- Theory of city planning 3

Fourth Semester
- Business methods and accounts 2
- Road construction and maintenance, drainage and water supply . . 4
- Building construction — methods and details 4
- Materials of construction 2
- Specifications, contracts and estimating 2
- Sociology and recreation activities 2

Your committee further recommends that the executive of the institute approach the governing bodies of all the larger park systems in the United States and Canada with a view to the adoption of the apprenticeship system in park work, and that negotiations be opened with the following universities looking to the establishment at one, or possibly two of them of the two-year course as set forth above, *viz.:* University of Minnesota, Cornell, Michigan Agricultural College and the University of Wisconsin.

Your committee has noted with interest the report of the reporting committee at the Kansas City Convention, but is of the opinion that any reasonably adaptable student, after passing through the apprenticeship and university courses, should be fit to branch out and make a success not only in the lines enumerated by the reporting committee, but in many other directions, should circumstances cause him to leave park executive work."

Report signed by Allen S. Wootton, Park Engineer, Vancouver, B. C., chairman; E. A. Piester, Department of Landscape Design, Ann Arbor, Mich.; L. P. Jensen, Arboriculturist, St. Louis, Mo.

Educational Opportunities Now Being Offered in Various Institutions of Higher Learning That Relate to the Training of Park Executives

While it is true that no institution of higher learning in America is at the present time specifically giving a course or courses for the training of park executives, the elements of a possible four-year course of training are to be found in many such institutions. In some few institutions the elements of a post graduate course may also be found.

Institutions Offering Courses in Landscape Architecture.

One of the functional fields of activity most closely and fundamentally related to park service is the field of landscape gardening or landscape architecture. "Approximately fifty colleges, universities and technical schools in the United States are now giving a total of several hundreds of courses in landscape gardening. These courses have practically all grown up in the past twenty-five years, and their propagation visibly continues." (Frank A. Waugh, *Landscape Architecture*, October, 1926, page 60. Extracts from paper prepared for the International Congress of Plant Sciences at Cornell University, Ithaca, New York, August 1926.)

The majority of these courses are more cultural than professional in their objectives. And, in so far as they relate to the training of undergraduates, Mr. Waugh suggests that landscape gardening should be a cultural subject to one hundred college students for every one who studies it professionally, just as art is now. As a cultural subject, he further suggests, it should emphasize the social values of the following objectives: (1) To make snug, comfortable and beautiful homes. (2) To make clean, healthful and beautiful cities. (3) To protect and interpret the native landscape.

To the student who elects to fit himself for park executive work the distinction between the cultural and professional aspects of a course or courses in landscape gardening is a very important consideration. The probabilities are, in view of the many other fundamental fields of activity and knowledge with which he must be more or less familiar, that he will, in relation to the field of landscape gardening, have to pursue the subject further than if he were studying it for cultural objectives, and not so far as would be necessary for professional purposes. In this case, however, the training would partake more of the nature of a cultural training than of a professional training.

Courses of Interest to Park Executives.

At some of the institutions offering these courses special attention has been given to the requirements of park executives. The following are excerpts from a statement (*Parks and Recreation*, Vol. IX, No. 6, July-

August 1926, pages 616-618) concerning the efforts that have been made at the Massachusetts Agricultural College: "Recognizing the need for sound general education and thorough technical training for park executives the Massachusetts Agricultural College has endeavored to build up a course of study which would meet those requirements. As far as possible these requirements are met in the regular four-year curriculum of the college, and more especially in that group of subjects known as the major in landscape gardening. As the problem works out in college we have two main objectives, (1) to give a good college education, (2) to lay a solid foundation in the general principles of landscape architecture. In the training of park executives we can hardly go further than to introduce the elementary applications of these principles to the problems of park design, construction and maintenance. A special effort is made first of all, however, to give a good thorough general education. The park executive certainly ought to have the standing of a college graduate. He ought to have a good general understanding of mathematics, science, literature, economics and sociology. There is always a tendency to crowd out these subjects, replacing them with technical courses in landscape architecture.

In the four-year curriculum at the Massachusetts Agricultural College the studies of the freshman course are general and required — the same for all students. In the sophomore year students in landscape architecture take drawing and surveying, introductory to their professional work. In the junior year they take up engineering, architecture and elementary design. In the fourth year they get more design along with additional work in engineering and construction.

Throughout the entire four years considerable time is given to subjects entirely outside the professional group. Some of the studies which would be taken by practically every student following a major course in landscape architecture are: Mathematics, surveying, chemistry, physics, botany, entomology, geology, economics, sociology, English composition, English literature, drawing, engineering, architecture, principles of design, park design, estate design, city and country planning. A number of other subjects are available at the election of the student. Special emphasis is placed on the use of good English, and courses in English are taken practically every term of the four years. Among the technical subjects special emphasis is laid upon engineering and construction, both of very great importance to prospective park executives."

Prof. James Sturgis Pray, chairman of the School of Landscape Architecture of Harvard University, in writing of the opportunities offered by the school in training park executives, says:[1] "Our Harvard Graduate School

[1] Excerpts from *Parks and Recreation*, Vol. IX, No. 5, May-June 1926, pages 513–518.

of Landscape Architecture always welcomes men of ability and character who desire to equip themselves for meeting the responsibilities of a park executive. While our school directs its two alternative curricula — the one for the general practice of landscape architecture with some introduction to city planning; and the other for those aiming to specialize in city planning and who are given the principles of landscape architecture as a basis for this specialization — toward developing in its students the power to create designs of land areas more than to execute them or to maintain them or to administer them under use, there is little of the instruction offered that does not bear fundamentally upon execution, maintenance, administration or operation, since, in order to execute and maintain and administer intelligently, an understanding of the reasoned basis of the arrangement of the area to serve its uses is essential. In the past a common source of failure on the part of park superintendents has been their lack of sufficient understanding of the designs prepared by competent landscape architects and their consequent lack of respect for them and adherence to them and their spirit. This lack of understanding and consequent respect has led to the doing of many things entirely out of keeping with the main original design. There has certainly not always, though there has sometimes, been the excuse that the original designer so lacked understanding of the problems of execution and economical maintenance and effective administration that it was necessary to alter the design to make it practical. I am confident that the better-trained and broader-minded among our present park executives will all agree with me that a park executive should have as good an understanding as possible of landscape design, particularly as applied to parks of different sorts and sizes, playgrounds and the various other recreation spaces which come under the administration of a superintendent of parks. In this, our courses in theory, design, construction and planting all give most practical instruction.

But life is short; and usually the man who looks forward to the career of a park executive does not feel that he can take the time, however desirable it may be, for a whole training toward the practice of landscape architecture, and, if he could and did take such training he would probably go into the general practice rather than in the work of park superintendence, though some of our graduates do, as a matter of fact, take up park superintendence in preference to professional practice. Therefore he must at best usually be selective, and we are always ready to admit such men to special problems in their own chosen field so long as their previous equipment and training is adequate for their benefitting by these problems.

Those who have not had the equivalent elsewhere should first have had our course in landscape topography and have acquired the power to

make a topographical survey, our courses in elementary drafting, lettering and freehand sketching, something certainly of the elements of architecture in its simpler forms and uses, for they will be concerned with at least minor architectural features needed in parks for park purposes (all other architecture should be wholly excluded from parks), the power to write correctly and effectively in English, and, of course, the utmost possible knowledge of the plant materials — trees, shrubs and herbaceous plants — with which they will be constantly concerned. This last involves fundamental instruction in many parts of horticulture as well as plant materials, and special work in planting design. For these fundamentals we offer definite, carefully chosen instruction, while all through our courses in design, construction and planting, the needs and requirements, methods and relative costs of maintenance are constantly kept in view by the instructor and brought to the attention of the student. The problems in design and construction, moreover, are nearly all based upon actual areas which the student visits with the instructor, and are thus enabled to make those nice adjustments of design to topography, which distinguish the best work not merely in design but in execution and maintenance.

It is desirable when possible that such instruction as a future park executive receives with us be supplemented afterwards by some study and travel abroad, particularly in England, and by a year or more of experience in superintendence on the ground in the service of some firm of landscape architects in good standing. It goes without saying that some experience also with a contracting firm and with a nursery is highly useful.

In closing, I am moved to urge that the better all-round general education the student has before coming, the more he will get from the course, and that the more he takes of the course, including those portions of it which bear less directly and obviously on his future work, the better superintendent he will become and therefore the higher position he will be able to attain among important park executives."

Courses Given at Harvard Bearing on Work of Park Executives.

Landscape Architecture, 2c. First half-year. Practice in Landscape Design (advanced course). Park Problems and Special Problems of Landscape Design. Solution of original problems based on topographical surveys. Lectures, field work, drafting, criticism and collateral reading. Monday, Wednesday, Friday, 2–5, and at least twenty-one additional hours a week.

Each of the larger problems will be preceded by special lectures with illustrations and references, and the work on them will commonly begin by a visit to the actual topography (in the vicinity of Cambridge) which furnishes the basis of the problem. Under the guidance of the instructor, the student is supposed to familiarize himself with the ground and to make on the print of the topographic map which is furnished him such notes as

may be necessary. The student is then to prepare the preliminary sketch for the solution of the problem. This is criticised by the instructor, revised by the student, again criticised, and then put into final form, according to the requirements of the particular problem, with such further criticism as may be necessary. The grading plans and other construction drawings required in the various problems are prepared under criticism in the same way.

Landscape Architecture, 3b. Practice in City Planning Design. Monday, Wednesday, Friday, 2–5, and at least twelve additional hours.

Landscape Architecture, 4a. Second half-year. Principles of Construction (first course). Practice in Preparation of Construction Drawings. Lectures, problems, criticisms and collateral reading. Monday, Wednesday, 12–1; Friday, 2–5, and seven additional hours.

Landscape Architecture, 6. (First half-year, 61; second half-year, 611.) Plants (Trees, Shrubs and Herbaceous Plants): Their Nature and Management. Elements of Horticulture. Lectures, supplemented by reading; field study with critical reports; work in the greenhouse. Tuesday afternoon, part of Saturday morning (second half-year, part of Saturday afternoon), and one additional hour (seven hours a week).

The course aims to give a comprehensive view of the field of horticulture, with special emphasis on those parts which are of most importance to the landscape architect. It includes (1) soils, their physical texture, chemical composition, manures, fertilizers, soil bacteria, drainage and tillage as these affect plant growth; (2) propagation of plants, horticultural varieties, the influence of environment and hardiness and winter protection; (3) pruning, tree repair, tree moving, street and parkway plantings; (4) insects and diseases, their life history, prevention and control; (5) management of plants in greenhouse, hotbed and seed bed and nursery processes; (6) lawn making, orchards, fruit, vegetable and cut flower garden; (7) planting of shrubs and herbs, preparation of beds, care of plants and hardy border; (8) special plantations, rock and alpine gardens, water and marsh plantings.

Landscape Architecture, 7a. Plant Materials. Plants in Relation to Planting Design (first course). Lectures, reading and field work. Thursday at 9 and 11, part of Saturday morning (second half-year, part of Saturday afternoon), and three additional hours (seven hours a week).

Landscape Architecture, 7b. First half-year. Plant Materials. Plants in Relation to Planting Design (second course). Lectures, reading and field work. Thursday, 2–5, and four additional hours.

It includes (1) autumn perennials and annuals; (2) ferns, evergreen perennials and hardy bulbs; (3) hardy border herbs; (4) wild gardening, rock, water and marsh plants.

Landscape Architecture, 9. Planting Design of Public Areas. Problems, lectures, reading, reports and field work. First half-year: Thursday, 2–5 and at least seven additional hours. Second half-year: Thursday, by appointment and at least eight additional hours.

Landscape Architecture, 10a. First half-year. Principles of City Planning, illustrated by a critical study of examples (first course). Lectures, with collateral reading and conferences. Monday, Wednesday, 10–11. Additional hours for conferences, reading and research. Individual conferences by appointment.

Horticulture. Plant Study and Appreciation. Lectures and special readings; identifications in classroom, and field excursions. Forenoons at Robinson Hall; afternoons in the field, or, if stormy, work in the school's special library in Robinson Hall.

This course is designed to make the student acquainted with the more common of our native trees and shrubs, as well as those introduced from other countries for ornamental use. The work will consist of a daily lecture at 9.00 A.M. on the character and identification of some half-dozen plants, with sketches and notes made by the students from living material, and a lecture at 10.00 A.M. on the manner of plant growth and the simpler processes of horticulture. The afternoon will be devoted to a field excursion to illustrate the morning lectures; or, if stormy, to readings in the special library of the School of Landscape Architecture, the college library, or the Boston Public Library, each of which has a very large collection of books on ornamental plants and their uses.

The afternoon walks will include the Arnold Arboretum, the Harvard Botanical Garden, the parks of Cambridge and Boston, the metropolitan parks, and many private estates and commercial nurseries of this region. This course will begin on July 6, 1926, and last six weeks, coinciding with the dates of the opening and closing of the Harvard Summer School of Arts and Sciences. The tuition fee for this special course is thirty dollars, payable on the opening date.

(L) *Play and Recreation, L10.* Community Recreation. Course for organizers of community recreation, physical directors, playground leaders, teachers and social workers. Lectures, reading, discussion and reports. Half course (second half-year). Friday, 7–9 P.M.

The course will begin with a consideration of the nature and significance of play in its various educational and social aspects. The theory will be related practically to the various uses of play in constructive education and social progress; and the place of play in the home, school, church, settlement and community, both in free and in commercialized forms, will be considered. The more technical part of the course will begin with a consideration of the organization and administration of play and recreation systems, including from among the following topics such as prove to be of most interest to the class: types of administration (playground association, recreation commission, board of education, park board); types of centers; supervision; organization of corps; training of play leaders; surveys; use of existing facilities, school buildings and grounds, vacant lots, streets, water fronts; commercial recreation.

Engineering Schools.

Some civil engineers have entered the field of park executive work. This came about not because the schools of engineering consciously and definitely attempted to train men for park executive positions but rather because engineers employed for specific engineering services in park departments developed a capacity and a love for the general executive work. It is doubtful whether schools of engineering will ever undertake to correlate

courses with the object of training park executives for the reason that engineering, as a major form of park activity, is not a constant factor in park service, except in very large systems. In the development of a new system or an extensive expansion of an old system involving a great deal of property acquisition and construction the engineer is indispensable. But when this period is past and the work settles down to the routine of maintenance and operation engineering problems become of distinctly minor importance.

In contrast with this situation, the executive, even in maintenance and operation, is constantly faced with important problems in horticulture, landscape design or the continued development and preservation of landscape designs. Moreover the engineer, as such, should always work under the general direction of the landscape architect and according to the general and specific plans of the landscape architect, although in the technical execution of the engineering problems he is the supreme authority.

Practically all the larger municipalities and counties of the United States employ one or more engineers whose services are available to park and recreation governing authorities. In fact, in many communities, the laws specifically provide that the engineering work be done by the city or county engineer. The number of municipalities or counties maintaining departments of landscape architecture is practically zero.

Educational Opportunities for Training in Play and Community Recreation.

During the past quarter of a century park and recreation departments have been increasingly concerned with the problems of a very wide variety of human activities — problems so varied as to include practically all the major interests of people of all ages and both sexes which can be expressed during their leisure time. A great many institutions of higher learning and some special schools have taken cognizance of this general interest in play and recreation among the people and instituted courses for the purpose of interpreting it and for the training of leaders for its guidance in this and that phase.

A study made by the Playground and Recreation Association of America (1925–26) as to the number of colleges, universities and special schools offering courses in some phase of playground, general recreation and community organization work showed one hundred and seventeen institutions giving such courses in the United States. No doubt there are many others that were not reported. In the majority of these institutions the courses in play and general recreation are parts of the courses offered in the physical education departments. However, the content of these physical education courses is very much broader than the average layman would imagine. The

Chicago Normal School of Physical Education, for example, presents a two- or three-year physical education course which includes games for all ages; coaching of athletics; playground training; pageants and festivals; music; folk, character, group, social, æsthetic and interpretive dancing; playground program making; campcraft; Girl Scout and Camp Fire Girls work. The Columbia Normal School of Physical Education (Chicago) includes in its courses, games, sports, folk dancing, pageantry, children's plays, community drama, arts and crafts, story-telling, music, organization, and park administration. The Normal College of the American Gymnastic Union (Indianapolis) offers two, three and four-year physical education courses, including campcraft, play and recreation festivals and pageantry, games, dancing, apparatus work, nature study, handcraft, boating, swimming and athletics. A summer session in camp at Elkhart Lake, Wisconsin, includes courses in sports, games and dancing. Northwestern University offers courses in physical education, playground management, pageantry, technique and methods, social centers, community organization, recreation leadership. Practice teaching on playgrounds and in social centers is required. Many other schools of this type might be mentioned.

The Recreation Training School of Chicago, which for a number of years has been training recreation workers, has been amalgamated with the College of Liberal Arts of Northwestern University, Evanston, Illinois, and courses are being given in dramatics, games, playground administration and various phases of the recreation program.

These examples are typical of what educational institutions — colleges and normal schools and special physical education schools — are doing to help in the training of recreation workers.

Because of the need for a post graduate school giving definite courses of training for recreation executives who are to assume responsibility for the organization and administration of community-wide recreation programs, the Playground and Recreation Association of America established in 1926 a national recreation school. The course covers one year. Applicants for admission must be graduates of approved colleges or universities, or have the equivalent in training and experience, and must satisfy the committee on admissions that they possess the capacity for leadership.

The course at the present time includes the following subjects:

Games. How to lead and teach games for all ages.

Athletics. Emphasis upon learning, organizing and conducting major sports — basket ball, baseball, football, soccer.

Social Recreation. Planning recreation programs for churches, clubs, neighborhood groups, industrial groups, picnics and community gatherings.

Community Music. Training in appreciation, song leading, use of introductory instruments, organization of choruses, bands and orchestras.

Community Drama. Emphasis upon simpler forms including story-telling, charades, pantomime, pageantry;

also play selection and production for neighborhood groups; special attention given to inexpensive methods of producing dramatic activities.

Handcraft. How to design and create articles from wood, paper, wax, and other materials; toy-making, basketry and modeling.

Folk Dancing. Training in various peasant and national dances; also old American dances.

Nature Study. Nature appreciation, leading nature hikes, seasonal programs, nature resources of the community.

Camping. Choosing sites, planning equipment, organizing program, securing leadership for out-of-doors camps.

Special Activities. Training in use of specialized programs such as Boy Scouts, Girl Scouts, Camp Fire Girls, etc.

Reading. Selecting proper reading lists for various age groups; relationship of recreation workers to libraries.

Girls' Problems. Adaptation of recreation activities to meet the special needs of girls and women.

Boys' and Girls' Clubs. Principles of organizing and conducting boys' and girls' clubs and their use in a recreation program.

Home Recreation. Service of the recreation department to homes in training parents for home play; selection of material and building of simple equipment.

Program Making. How to build and develop a recreation program to serve all groups in the community with a variety of activities throughout the year; discussion on balancing the program.

Community Centers. The use of schools and community buildings as recreation centers; problems of programs and administration.

Play in Institutions. How to provide recreation programs and leadership for institutions, including orphanages, hospitals, prisons, asylums and homes for the aged.

Play Facilities. Layout of athletic fields, construction of buildings and swimming and wading pools, equipping playgrounds and gymnasiums and other play centers.

Park-Recreation Problems. Securing land, adapting for recreation use, administration problems.

Special Celebrations. Programs for holidays, old home week, festivals, etc.

City Government Problems. Discussion of laws and the procedure of municipal departments responsible for recreation.

Problems of Recreation Finance. How to secure funds for recreation; public and private support; concessions, charges and other income-producing methods.

Publicity Problems. Interpreting the program to the public through the press, pamphlets, reports, bulletins, radio, pictures, stunts, speaking and other forms of publicity.

Field Problems. A discussion led by field workers of actual current problems being faced.

Colored Communities. Discussion of ways of serving colored groups.

Personnel Problems. Securing and training staff workers and volunteers; salaries, hours of work, contracts, promotions, vacations, sick leave, etc.

Character Building Problems. Analysis and discussion of character values in play activities; how to relate play to the building of character.

Problems in Coöperation. Discussion of other agencies and how to work with and through them in the community.

Surveys. How to obtain essential facts about a community as a basis for conducting recreation activities.

School Recreation Problems. Discussion of special problems involved both when the recreation of a city is conducted by the school board and when school property and personnel are used by agencies other than the school board.

Organization and Administration. A complete picture of the responsibilities of a superintendent of recreation and a discussion of the executive and administrative problems arising out of the conduct of a community-wide recreation program.

Nature of Man and Function of Play. Discussion of the theories of play; values of play in individual and community life.

Local Special Problems. Discussion of current recreation problems that come to the Association by mail and personal inquiry; these questions cover the whole field of play and recreation.

The school term continues for thirty-six weeks. Instruction is given four hours daily for six days per week. In addition twelve hours of field work are required each week. Throughout the year special reports are required,

examinations are given, leadership qualities tested, observation trips taken and frequent individual interviews are had with students by faculty members and local recreation leaders. It is the intention to add to the subjects already included in the course elementary instruction in horticulture, landscape design and construction as related to the development of parks and other recreation areas.

Importance of Training in "Human Engineering."

The foregoing statements of suggestions concerning the training of modern park and recreation executives represent two basic lines of approach — two major emphases. The Committee on the Training of Park Executives of the American Institute of Park Executives and the institutions of higher learning mentioned, approach the problem of training largely from the landscape gardening, construction engineering phases of the problem. The National Recreation School of the Playground and Recreation Association of America and other educational institutions training recreation workers approach it from the human use or human engineering side of the problem. A well-balanced course of training for park executives would appear to lie between these two extremes, especially when the executive is expected to head a unified park and recreation system. However, even where there is a park department and a recreation department in the same community it is important that the park executive know something technically of the social-recreational functions of his department and the recreation executive know something technically of the landscape design and engineering functions of his department.

It is vital, therefore, that in the training of park superintendents more attention be given the human engineering problems involved. For the past twenty-five years the development of community park service has tended more and more toward a very broad human service, demanding of the chief executive of a department great executive ability as a business organizer and administrator and as an organizer and leader of the people in a range of activities and services which run almost the whole gamut of human interests. All the other forms or phases of his executive duties are fundamentally related to his functions of interpreter, organizer and leader of the people in leisure time activities whether these activities be characteristically active or characteristically passive. Efficient business organization is solely for the purpose of securing maximum returns for money and energy expended in terms of service to the people. Landscape gardening is defined as "*the art of arranging land or landscape for human use, convenience and enjoyment,*" or, "*the art of arranging land for human use with a controlling regard for beauty.*" Construction engineering is the handmaid of landscape archi-

tecture and is performed solely the better to fit given areas of land and water for human use. The same may be said of architecture in so far as it is related to the designs and development of recreation areas. The sole purpose of maintenance is to keep designs, the elements of designs, equipment, etc., up to the *n*th degree of efficiency for the effective human service for which they were intended.

The modern park executive cannot become so absorbed in the creative phases of either landscape architecture or engineering, or in the routine of maintenance as to fail to see, vividly and clearly, through and beyond to the people and their recreational needs.

In this day of specialization it will probably prove better if the modern park executive leaves the creative phases of landscape architecture, engineering and architecture to the professionals in these several fields, pursuing his studies and practical training more from the standpoint of principles and the application of these principles to the definite and specific human purposes the designs are intended to serve. He will be called on to sit in judgment, along with his governing authority, on the designs of the professional artists, and the results are more likely to conform to "practical" purposes intended than if the professional artist were left entirely to himself or the executive attempted to be both artist and executive.

The modern park executive's position is closely comparable to the chief executive or superintendent of a modern school system. It is the supreme duty of the chief executive of a modern school system to organize and direct educational processes although he has under his supervision and control, subject to the governing authority, lands, vast structures and a myriad collection of equipment and supplies. He must sit in judgment on the designs and plans of the building architect and on the designs of the equipment builders, not so much from the viewpoint of the creative technique that has been put into the designs as from the viewpoint of the usableness of the structures and equipment. Maintenance problems and business organization problems are extensive and complicated but these are subordinated wholly to the primary purpose of the system which is to serve the educational needs of the people.

So it is with the modern park executive, except that he is to serve the recreational needs of the people instead of the educational needs — two great fields of public service which, in the last analysis, are not greatly different from each other so far as ultimate objectives are concerned, however different they may be in method or in the major equipment used.

A Suggested Course

All the suggestions that have been made concerning the training of park executives apparently agree that it is desirable that the executive have collegiate standing, and that a broad, liberal training is fundamental. This, coupled with studies in the special fields of knowledge intimately related to the major functional activities of a modern park system, supplemented by actual field work in the various major divisions of a highly developed and well organized and administered system during every summer vacation, ought to give a fairly all-round training.

The subjects of study in such a course will fall naturally into five major groups, although in some instances there will be overlapping. The five major groups are:

(*A*) *General Course.* This would comprise, chiefly, subjects of a liberal or cultural nature, although many of them will be preparatory to more technical courses later.

(*B*) *Executive Administration.* Business organization and management.

(*C*) *Community Recreation.* Organization and leadership of the people in many different forms of recreational activity.

(*D*) *Landscape Gardening.*

(*E*) *Park Engineering.*

A tentative list of subjects that may be studied under each group follows:

(*A*) *General Course.*

1. *English.*

(*a*) Composition, general.

(*b*) English literature including American literature.

(*c*) Public speaking.

(*d*) Practice in writing with special reference to composition of reports, publicity material, orders, etc.

2. *Modern languages.*. This may be either German, or French, or Spanish, to be studied to extent of securing a reading knowledge of one or the other of them.

3. *Mathematics.*

(*a*) Higher algebra.

(*b*) Trigonometry.

(*c*) Calculus.

These subjects are preparatory to courses in landscape architecture and in engineering.

4. *History.*

(*a*) Medieval and modern.

(*b*) American history.

It would be very desirable if American history could be studied more from the viewpoint of the social, industrial, cultural, educational life of the people than as political history. It would thus present a very definite background to a better understanding of the present-day social-recreational needs of the people.

5. *Elementary botany.* This would be preparatory to a more or less intensive study of plants in Group D. It would also bear a direct relation to nature study as an activity in community recreation or Group C.

6. *Elementary geology.* Preparatory to courses in Group C (nature study) and Groups D and E.

7. *Elementary zoölogy.* Preparatory to courses in Group C, and to Group D. Bears a direct relation to zoölogical gardens.

8. *Chemistry.* Preparatory to courses in Group D (analysis of soils, fertilizers, etc.) and courses in Group E (analysis of certain types of supplies and materials used in construction).

9. *Economics.* Preparatory to courses in business organization and management.

10. *Sociology.*

11. *Social psychology.*

12. *Political science*, with special reference to civil government of villages, towns, cities and counties.

(*B*) *Administration, Business Organization and Management.*

1. *Municipal and county government*, if not covered in political science.

2. *Park and recreation legislation.*

3. *Municipal and county finances.* Sources of revenue, budget-making, financial reports, etc.

4. *Accounting, including cost accounting.*

5. *Principles of management.*

6. *Personnel practice.*

7. *Office management.*

8. *Statistics.*

(*C*) *Community Recreation Organization and Leadership.*

1. *Children's playgrounds.* Games and other activities suitable for different ages and sexes, equipment and supplies, organization and conduct of playground activities.

2. *Municipal athletics.* Methods of promoting, organization and conduct of leagues, tournaments, meets, etc.

3. *Community music.* Promotion of musical activities through organization of bands, orchestras, choruses, glee clubs, music memory contests, "music week," music festivals, harmonica contests, band concert programs, opera concerts, etc.

4. *Community dramatics.* Organization and conduct of story-telling, plays, pageantry; construction of equipment and operation of little theatre, community theatre, outdoor theatre; costume making, stage lighting, community wardrobe, etc.

5. *Nature study.* Organization and conduct of nature study clubs, classes, hikes, excursions for the constructive use of the general plant resources of the parks, greenhouses, conservatory; for study of specimens of animal life in the zoo; study of geographical and geological forms in parks and in vicinity of community; for observation and study of bird life and any other natural resources in parks and in the community and its vicinity. Organization and conduct of community-wide botanical contests, contests in correct identification of animals in zoo; vegetable and flower gardening, home beautification; nature museum.

6. *Handcraft activities*, including the graphic and plastic arts.

7. *Boys' and girls' and adult clubs.* Organization and conduct of, programs, etc.

8. *Community centers.* Study of designs of structures including school buildings, settlements and community houses; equipment; programs and administration.

9. *Municipal camps.* Choosing site; layout of camp; structures; equipment; water supply; sewage, garbage and refuse disposal; programs, organization and administration.

10. *Community coöperation.* Establishing and maintaining contacts with the homes, schools, churches, industrial and commercial establishments, the press and various types of organized groups in the community.

(*D*) *Landscape Gardening.*

1. *Surveying.*

(*a*) Plane surveying.

(*b*) Topographical surveying.

2. *Horticulture.* A general course including practically the same subjects as that presented at the Harvard School of Landscape Architecture in landscape architecture, Course No. 6 (see page 1003).

3. *Drawing.* Practice in plane, cross section and perspective drawing.

4. *Landscape design*, principles of, with special reference to the designs of various types of recreation areas.

5. *Practice in landscape design*, with special reference to designing of different types of recreation areas.

6. *Plants and planting design.*

7. *Entomology*, with special reference to those insects affecting the life of plants used in parks and other recreation areas.

8. *Architecture.* Study of history, orders, types of architecture suitable for different purposes in design of parks and recreation areas.

9. *Principles of city planning.*

10. *General forestry.*

(*E*) *Park Engineering.*

1. *Surveying.* Plane and topographic. If studied under Group D not necessary to repeat here unless it is desirable to take an advanced course.

2. *Principle of construction.* Practice in construction drawings, interpretation of topographic maps, preparation of grading plans and calculation of quantities of materials, making estimates, specifications and drawing of contracts, etc.

3. *Construction and maintenance of roads, walks and bridges.* Surveys, grading plans, estimates, specifications, etc.

4. *Sanitary engineering*, with special reference to those problems in parks having to do with water supply and drainage; sewage, garbage and refuse disposal; pest control.

5. *Electrical engineering*, with special reference to general lighting of park and recreation areas; lighting of roadways, boulevards, walks, buildings; lighting of active recreation areas for night use; use of electricity for power purposes; specifications, estimates, contracts, etc.

6. *Architecture.* Study of plan drafting, specifications, estimates, contracts, materials, etc.

Extra Curricular Activities.

It is highly desirable that the student take an active interest in as many different student activities as possible during his years at the college or university, for these can contribute much that will be valuable in the field of organized recreation, in general culture and in the art of meeting and mingling with people.

Some of the possible extra curricular activities that may be found valuable are:

1. *Athletics.* During the four or five years at the college or university it will be possible for the student to learn the rules and how to play fairly well basket ball, tennis, indoor baseball, playground baseball, baseball, football, soccer, golf, etc., and how to swim. Special attention should be given to study of the methods used by the physical educational leaders of the institution in organizing and conducting intra-mural athletics or mass athletics, for this type of athletic organization is somewhat comparable to

municipal athletics as organized and conducted by park and recreation departments. A study of the organization and conduct of athletics for women through conferences with the women physical education leaders and through observation of athletic games and sports conducted would give most valuable insight into an increasingly important phase of community recreation service. It would be very valuable for the student to learn as much as possible concerning the organization and conduct of field meets and tournaments.

In most universities and colleges from one to two years of physical education is required of all students, and at the "land grant" colleges military training is required. No provision has been made for these possible requirements in the foregoing tentative outline of subjects in a collegiate course.

2. *Social activities.* The future executive will have to deal with community social activities, and these, especially in the field of social dancing, present some very difficult problems. While the university social problems are somewhat different from the social activities problems of a community, there is enough of similarity to make close observation and active participation in the university social activities very valuable. Aside from their bearing upon future executive problems, their value as a personal cultural training should not be overlooked.

3. *Dramatics.* Membership in a dramatic club and active participation in the preparation and presentation of one or more plays, if the student has any histrionic ability, will be a valuable preliminary training for an appreciation of community dramatics, a form of communal activity that is constantly becoming of increasing importance in park and recreation systems.

4. *Use of the English language.* Participation in dramatics is one of the best possible forms of activity for cultivation of good enunciation and style of speech. Participation in the public debates and writing of news items for the college paper are other possible means of practice in the use of English.

5. *Music.* Practically every executive will or ought to have a great deal to do with music in his program of recreation. A close observation of the organization and conduct of university musical organizations and affairs, and perhaps participation in at least one organization would be a desirable preliminary practical training in appreciation of music as a communal form of recreation.

If the college or university happens to be located in or in the vicinity of a city where there is a well-developed park and recreation system, time spent in observation and study of methods of administration, types of activities conducted, designs of different kinds of areas, equipment used,

structures, propagation and care of plants, construction activities and others, would be time well spent.

With a very heavy schedule of subjects to carry in the college or university it will, of course, be an exceptional student indeed who can find the time or will have the ability to participate largely in extra curricular activities, although even an average student can accomplish a great deal in this respect by proper organization and use of his time. For one whose role in a community is to be that of an executive and an organizer and leader of the people the activities of the university community are in some respects more important as a training than some of the subjects studied in the regular curriculum.

Field Work During Summer Vacation.

No amount of university or college training can possibly give the sort of training that experience in actual field work can give. The most that academic study can do is to teach principles, facts, methods of getting at facts and their orderly handling, orderly processes of thought, and give a general vision of one or more fields of human knowledge. The real training of a park executive begins when he is face to face with the actual problems of his profession.

An ideal system of training would more nearly be approximated if field service and academic and laboratory study could go hand in hand as is practiced in some engineering schools and teacher training colleges, whereby the student spends part time in college or university and part time in shop or classroom. The University of Cincinnati is now offering a five-year course in landscape architecture organized upon this plan.

In place of this desirable situation or plan it is recommended that candidates for the profession of park executive spend each summer vacation in active service in one major field of park and recreation service. In order to secure as much as possible of this sort of training it might be desirable to base the granting of a degree upon such performance for at least four summers, which would give approximately a solid year of field work. It is suggested that one vacation period be spent in the landscape division, one in the construction and maintenance division, one in the organized recreation division and one in the general office.

This plan would necessitate coöperative arrangements with several leading park and recreation systems throughout the country.

Postgraduate Work.

Meagre as the technical subjects are, as presented in the foregoing outline of a general collegiate course of training for park and recreation executives, it is doubtful whether all these subjects, together with the general

liberal arts subjects, can be crammed into four years at any college or university. In order to place the profession of park executive upon the plane which its importance warrants a postgraduate course of study and training of from one to three years is considered essential. The plan of summer vacation field work is, in a sense, a sort of postgraduate course, but this by no stretch of the imagination can possibly take the place of a genuine postgraduate course.

This postgraduate course should mainly comprise subjects falling within the technical fields of service of park departments, such as courses in executive organization and administration, landscape architecture, engineering and community recreation. As to which of these fields should be emphasized the most in postgraduate study would no doubt largely be determined by the preferences of the individual students. It would be wise, however, to keep them as nearly evenly balanced as possible, for even through postgraduate work it is not the aim to turn out professional workers in any one of the fields with the possible exception of executive organization and management. In the larger systems the executive can always have at his command professional landscape architects, engineers and organized recreation workers and trained office secretaries, but the specific and general problems of executive organization and administration he will of necessity have to handle himself. The objectives of study in landscape architecture, engineering and community recreation are to give him an appreciation, and as much technical knowledge as possible, of the principles and operative processes involved in order that his role as general executive be to that extent strengthened. Even in the smaller systems it is desirable that the professional services of the landscape architect and the engineer be used as the need arises for them.

Personal Qualities of an Executive

The fundamental qualities and powers which make a successful and efficient executive are inherent — not made by external influences of any kind. While these qualities and powers may be developed and sharpened by study and practice, no amount of study or practice can put them into an executive who does not possess them in the beginning.

What are some of the essential personal characteristics of an efficient executive? The Committee on the Training of Park Executives of the American Institute of Park Executives mentioned some of these in their first report to the institute (see pages 995–998). In a book entitled "Executive Control," issued by A. W. Shaw Company, the requirements of a successful executive are given as follows: (1) Good health, (2) character, (3) disposition, (4) originality, (5) determination, (6) good observation,

(7) retentiveness of mind, (8) initiative, (9) training and (10) experience. Of this list initiative, determination and experience were found to be predominant among successful executives. To these ten requirements might be added energy, contagious enthusiasm, cheerful personality, constructive imagination, coöperative spirit, ability to grow with the work (öpenmindedness), faculty of putting himself in another's place, ability of forming correct judgments of people and events and a genuine love of the work and of the institution which the executive represents.

The majority of these requirements are mental and spiritual qualities and powers which no amount of collegiate study or apprenticeship training, no matter how extended, can put into a man if he does not already possess them. Not the least of the duties and responsibilities of instructors in colleges and of executives taking apprentices for training is to study closely each candidate for executive work for evidences of these mental and spiritual qualities, and if they are not found in such numbers and combinations as to augur success, to advise the candidate to enter some other line of work.

CHAPTER XXI

GENERAL REFERENCES TO LITERATURE ON PARKS

The literature on parks is widely scattered through many different kinds of publications. It is to be found chiefly in periodicals, park planning reports, reports of park departments, United States Census Bureau reports, city planning reports, in pamphlets dealing with specific phases of park problems and in books dealing with city planning, landscape gardening or architecture, horticulture, forestry, organized recreation, etc. It is interesting to note that during the entire history of park planning, development and operation in the United States only two general works upon the subject have appeared and one of these is devoted chiefly to park engineering.

In this manual, bibliographies have for the most part been placed within or at the end of chapters in as close proximity as possible to the text subjects to which they refer. The general references forming the subject matter of this chapter are intended to give a brief *résumé* of the general literature on parks.

BIBLIOGRAPHIES

Kimball, Theodora. "Manual of Information on City Planning and Zoning." Harvard University Press, Cambridge, 1923, 188 pages. This entire manual is invaluable to the city planner and the park planner. The bibliographies referring specifically to parks and recreation are to be found on pages 148–156 inclusive. Bibliography on Parkways, Boulevards and Pleasure Roads, page 124. These, with other references scattered through other sections of the manual, make the most complete bibliography on parks and allied subjects extant.

Playground and Recreation Association of America. "The Normal Course in Play," A. S. Barnes & Company, New York, 1925. At the close of each of the following chapters there is an extensive bibliography covering the field of organized play and recreation quite thoroughly:

	No. References
I. The Community Recreation Program	301
II. The Nature and Function of Play	87
III. Leadership	20
IV. Play Facilities	98
V. Organization and Administration	163
VI. The Growth of the Community Recreation Movement	84
Grand total of references in bibliographies	753

Some Books to Serve as a Library of a Department of Landscape Architecture, *Landscape Architecture*, January, 1927, pages 156–160. This bibliography, prepared by Miss Katherine McNamara, Chairman, Committee on Libraries and Collections, National Conference on Instruction in Landscape Architecture, is intended to function as the title indicates. However, park executives who are especially interested in the technical details of the landscape phases of their work will find in this bibliography something touching upon every phase of landscape art.

Recreation Department, Russell Sage Foundation, 130 East Twenty-Second Street, New York City. "Sources of Information on Play and Recreation." This is an extensive bibliography of literature on all phases of the leisure time movement.

BOOKS

Burnap, George. "Parks — Their Design, Equipment and Use." J. B. Lippincott Company, Philadelphia, 1916, 328 pages, 160 illustrations, 4 diagrams. Some of the subjects discussed include park designs in city planning, principles of park design, character and methods of treatment of "passing-through" parks, neighborhood parks, recreation parks; playgrounds in parks, effigies and monuments, architecture and seats

in parks, disposition of flowers in parks, planting design in parks, park utilities, decorative use of water, park administration in relation to planting design, etc. Practically the only general work on parks.

CHILD, STEPHEN. "Landscape Architecture." A Series of Letters. Stanford University Press, Stanford University, California, 1927, 279 pages, illustrations, maps, plans.

ELIOT, CHARLES WILLIAM. "Charles Eliot, Landscape Architect." Harvard University Press, Cambridge, Mass., 1924, 770 pages, illustrations, plans. The personal and professional history of a brilliant young landscape architect and park planner belonging to the early group of such planners. This is a book worthy to be in the library of every park executive.

HUBBARD, H. V., and THEODORA KIMBALL. "An Introduction to the Study of Landscape Design." Macmillan Company, New York, 1924, 406 pages, illustrations, 40 drawings, 36 full-page pictures. Part IV, "Landscape Parks and Reservations," deals with classification of outdoor recreation areas and design of large landscape parks and reservations. Entire work is of very great value to all park executives especially interested in landscape design.

LEWIS, NELSON P. "The Planning of the Modern City." John Wiley & Sons, Inc., New York, 1923, 457 pages, illustrations, maps, diagrams. See "Parks and Recreation Facilities," Chapter VII, pages 130–148.

LYLE, WILLIAM T. "Parks and Park Engineering." John Wiley & Sons, Inc., New York, 1926, 130 pages, illustrations, drawings, map. Deals briefly with the desirability and acquisition of parks,lands and surveys, design, landscaping and engineering, labor and contracts, construction.

MAWSON, T. H. "Civic Art: Studies in Town Planning, Parks, Boulevards and Open Spaces." B. T. Batsford, London, 1911, 375 pages, illustrations, plans. "Park Systems," pages 79–94; "The Adornment and Equipment of Public Parks," pages 185–206.

NOLEN, JOHN. "New Towns for Old." Marshall Jones Company, Boston, Mass., 1927; illustrations, maps. This little book is a record of achievements in civic improvement in some American small towns and neighborhoods. While it deals with the general subject of planning small communities, it contains much of value to those who are concerned primarily with park and recreation planning for small communities. Not the least of its merits are the two excellent bibliographies comprised in Appendix A and Appendix B.

OLMSTED, F. L., JR., and THEODORA KIMBALL. "Forty Years of Landscape Architecture." D. P. Putnam's Sons, New York, 1922, 131 pages, illustrations. This is Volume I of the professional papers of F. L. Olmsted, Sr. Other volumes are to be issued. No one of the great park planners and builders in America is more worthy of careful study by park officials than Frederick Law Olmsted, Sr.

ROBINSON, CHARLES MULFORD. "Modern Civic Art." G. P. Putnam's Sons, New York, 1918. See sections dealing with open spaces; parkways; distribution and location of parks, pages 287–354; illustrations.

ROBINSON, CHARLES MULFORD. "City Planning." G. P. Putnam's Sons, New York, 1916, 344 pages, illustrations, diagrams, plans. This work is written with special reference to the planning of streets and lots. See, however, Chapter XIII, "Public Reservations Other than the Streets," page 182.

PERIODICALS

Garden and Forest. This was a journal of horticulture, landscape art and forestry, conducted by C. S. Sargent, New York, from February 29, 1888 to December 29, 1897. Ten volumes, illustrations, plans. During these years many references to the development of the park movement throughout the United States appeared in its columns.

Landscape Architecture. A quarterly magazine which began to appear October, 1910, and has continued regular publication to date. It is the official organ of the American Association of Landscape Architects. It is published by The Landscape Architecture Publishing Co., 9 Park Street, Boston, Mass. This magazine is of very great value to park planners, builders and executives.

Parks and Recreation. A bi-monthly magazine published by the American Institute of Park Executives and the American Park Society. Began publication October, 1917, and has been regularly issued to date (1927). Publication headquarters, Rockford, Illinois. It is also the official organ of the National Conference on State Parks. The subject matter of each issue is presented by departments, *viz.:* Engineering Design and Construction; Horticulture; Zoölogical Exhibits; Landscape Design and Art; Recreation; National, State and Provincial Parks; Conservation of Wild Life; and General. Each issue is profusely illustrated. Because of the valuable material constantly appearing in this magazine upon every phase of park planning, design, construction, operation and maintenance, and because of the artistic make-up and excellent editorial work this magazine should be in the hands of every park governing authority, executive, and every lay citizen interested in parks.

Park International. "An illustrated bi-monthly magazine offering, from widely chosen sources, guidance in the development and enjoyment of park areas, both public and private." Publication began July, 1920, and continued for about two years. During its brief career a great deal of valuable material on parks appeared. Students may find copies for reference in various public and private-public libraries.

Park and Cemetery and Landscape Gardening. Published monthly by the Allied Arts Publishing Company, 114 South Carroll Street, Madison, Wisconsin. Began publication, 1891. In the pages of this magazine may be found many references to the park movement in America. It was for a time the official organ of the American Association of Park Superintendents.

The American City. Published monthly by the Civic Press, 443 Fourth Avenue, New York City. A magazine devoted to all phases of city life and affairs. Began publication 1910, and is now in its thirty-sixth volume. A great deal of valuable information about parks may be found in its columns. Illustrations, plans.

The Playground. A monthly magazine devoted to the promotion of play and recreation. Published by the Playground and Recreation Association of America, 315 Fourth Avenue, New York City, since April, 1907 to present date (1927). Illustrated.

Reports

Reference is here made to the following classes of informational materials:

1. Reports of the proceedings of the annual meetings of various national and local associations and other reports of such associations.
2. Park department reports.
3. Reports of city park plans by various park planners.
4. City plan reports containing reports on park plans.
5. United States Bureau of Census reports on municipal parks, and the reports of the Bureau on financial statistics of cities.

All these various types of reports taken together constitute by far the largest volume of material on parks that is to be had. So far as known there is not a complete collection of this material in any one place in the United States. The most extensive collections may be found in the reference libraries of the larger cities, notably the municipal reference libraries of New York, Chicago and Boston.

American Association of Park Superintendents. This organization was the predecessor of the present American Institute of Park Executives. The proceedings of the annual meetings were published in pamphlet form from 1899 until about 1917. From 1906 the Association also published bulletins from time to time. These ceased when the Association was reorganized and a regular periodical as an official organ established. The annual proceedings and the bulletins form a valuable and interesting library on various phases of park construction, administration and maintenance. They are now out of print and can be found only in the files of the American Institute of Park Executives, some park departments and reference collections in some public libraries. Reports of annual conventions and special articles have appeared since 1917 in *Parks and Recreation*, the official organ of the American Institute of Park Executives.

American Civic Association. Many valuable references to parks and recreation may be found in the reports of the proceedings of the annual meetings of this Association and in special reports issued from time to time.

American Park and Outdoor Art Association. Addresses and proceedings, 1897–1904. So long as this Association remained in existence the reports of its annual meetings were issued in pamphlet form. These reports contained addresses and papers on parks by leaders in this field of civic planning and development. They are chiefly to be found in reference collections of public libraries.

National Conference on City Planning. The reports of this Conference, which held its first session in 1909, contain a great deal of valuable information relative to park and boulevard planning as an essential and fundamental part of general city planning.

National Conference on Outdoor Recreation. The first session of this Conference, called at the instance of President Coolidge, was held in Washington in 1924. The second session was held in Washington in 1925. The reports of these two sessions, issued as United States Public Documents, cover the entire field of outdoor recreation, municipal, state and national, in a general but very illuminating manner.

Park Plan Reports. The making of such reports began close to the middle of the last century. In the second and third decades of the last half of the last century a considerable number of cities had park plans

made by the planners of that day. Among such cities were Buffalo, Boston, Minneapolis, parts of Chicago, San Francisco, etc., etc. During the fourth and fifth decades many more such reports were made, and during the past quarter of a century they have become very numerous and have often been combined with general city plan reports. See Chapter II, pages 68, 69 for references to some plan reports. A more complete list can be had upon application to the Playground and Recreation Association of America, 315 Fourth Avenue, New York City, or to the Recreation Department of the Russell Sage Foundation, 120 East Twenty-Second Street, New York City. In the Manual of Information on City Planning and Zoning, may be found very extensive references to both park plan reports and city plan reports.

Park Department Reports. Next to the minutes of the proceedings of park governing authorities the annual reports of park departments comprise the most voluminous literature on parks and park development in the United States that can be had. Unfortunately this source of information does not present a continuous record, as only a few departments have published annual reports continuously since their establishment. In the smaller cities these reports are almost invariably included in general municipal reports, and during the past ten years this has become a common custom even among many of the larger cities. A few cities that are now issuing very excellent annual reports are: Boston, New Haven, Waterbury, South Park and West Park Districts, Chicago, Minneapolis, Seattle, San Francisco, Kansas City, Missouri, Atlanta, St. Louis.

Some county park departments issuing annual reports include: Essex County, N.J.; Westchester County, N. Y.; Wayne County, Michigan; Cook County, Ill.; Union County, N. J.

Metropolitan park departments issuing annual reports include Boston Metropolitan Park Department, Cleveland and Tacoma.

So far as known, no individual, association or public library has a complete collection of park department reports. There is quite an extensive collection in the office of the American Institute of Park Executives, Rockford, Ill.; in the office of the Playground and Recreation Association of America, 315 Fourth Avenue, New York City, and in some of the large municipal reference libraries such as those in Boston, New York and Chicago.

Minutes of the Proceedings of Park Governing Authorities. The real history of the park movement in the United States is to be found in the records of the proceedings of park governing authorities. These are seldom published in full and the student of park affairs desiring to use such source material would be under the necessity of going to each city to consult them. The Commissioners of the Cook County Forest Preserves publish these records in full.

Playground and Recreation Association of America. The reports of the annual meetings of this Association since its first meeting at Chicago in 1906 to date comprise a veritable mine of information on all manner of questions relating to planning for playgrounds and recreation, administration, organization and conduct of activities, financing, laws, etc. Since 1910 these reports have appeared through the columns of *The Playground.*

The Playground Year Book, published annually by the Association as one of the numbers of *The Playground,* constitutes a valuable series of statistical summaries concerning playgrounds and recreation from the year 1911 to date.

The Association's collection of facts relative to the parks and other outdoor recreation areas of approximately 2,700 villages and cities and some 45 counties as of 1925–26 is perhaps the most comprehensive in existence.

Portland, Oregon Public Library. In 1926 the Reference Librarian of the Portland Public Library prepared and issued a statistical report on the parks of 66 cities in the United States. This was later reprinted by the Municipal Reference Library of New York City, April, 1926.

The Civic Press, New York. This organization is the publisher of *The American City* and the *Municipal Index.* The latter from time to time contains valuable reports on parks and playgrounds. The *Index* for the year 1927 presents quite a comprehensive statistical report on the parks and recreation facilities of 857 cities in the United States, section 17, pages 635–649. This same issue also contains valuable statistics on "Swimming Pools and other Bathing Places" in all cities in the United States, 5,000 population and over, section 11, pages 476–490.

United States Census Bureau Reports. The Census Bureau beginning in 1880 has issued a number of reports on parks in American cities. The complete list is as follows:

1880. Social Statistics of Cities, embodying reports on parks in all incorporated municipalities of 8,000 inhabitants and above. This is now out of print.

1900. Vital Statistics of Cities of 100,000 and Upwards, Eleventh Census of the United States, Vol. 21, Vital and Social Statistics, Part 2, pages 3–4. Shows total area of parks in each city, area to every 1,000 inhabitants and per cent of city area in parks.

1903. Statistics of Cities Having a Population of over 25,000, Table II, pages 109–113. Area of public parks.

1905. Statistics of Cities Having a Population of over 30,000, Table 45, pages 356–358. Parks, Playgrounds and Bathing Beaches. Table 46, Zoölogical Parks and Collections.

1907. Statistics of Cities Having a Population of over 30,000. Table 68, Public Parks and other Public

Grounds; Table 69, Playgrounds; Table 70, Baths, Bathing Beaches and Zoölogical Parks and Collections.

1916. General Statistics of Cities, including statistics of parks, playgrounds, museums and art galleries, zoölogical collections, music and entertainments, swimming pools and bathing beaches, and other features of the recreation service. Covered all municipalities of 30,000 and over. Copies can be had from the Government Printing Office, Washington, D. C.

Financial Statistics of Cities. These reports of the Bureau of the Census show the expenditure for recreation in all cities of the United States of 30,000 population and above. The statistics are segregated under the heads of educational recreation; general recreation; parks and trees; quasi-productive park enterprises. The reports are issued annually.

Reports of State Finance Departments. A number of the state governments through their finance departments issue annually comprehensive financial statistics of municipalities and counties. These reports usually show the income and expenditure for recreation in each municipality and county. They do not always segregate the income and expenditure as between or among public agencies conducting recreation activities, in instances where in the same city two or more agencies are conducting such activities. See Annual Report of Financial Transactions of Municipalities and Counties of California for the Year 1926, compiled by the State Controller and published by the California State Printing Office, for an excellent example of a report that does show complete segregation of income and expenditure for recreation.

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